# Advanced Level 4 Server

Network Manager's Guide

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# About this Guide

## Who should read this Guide?

You should read this Guide if you want to install and run the Network Solutions Advanced Level 4 Server for RISC OS and perform management tasks with it, such as adding and deleting users, controlling access to files, allocating space, and running a print spooler. You do not need to read all of this Guide if you only want to access and use the Fileserver as an ordinary user, but Part IV : *Users and the Fileserver* on page 115 onwards gives some information that will help you.

You should read Part I if you are upgrading from the Acorn Level 4 Fileserver. There are several versions of this product the and last one to be released was version 1.33. This part describes what has changed and how you can quickly install and use the Advanced Level 4 Server.

This Guide assumes that you are already familiar with the RISC OS desktop and can use the desktop to perform routine tasks such as opening directory displays and menus, copying files, formatting floppy discs and loading applications. If you need advice on any aspects of normal RISC OS operation, consult the RISC OS 3 User Guide or Welcome Guide supplied with your computer.

This Guide describes how to use the Advanced Level 4 Server from the RISC OS desktop. It is not possible to control it from the command line.

You can only run the Fileserver on a computer connected to an Acorn Universal Network (AUN), typically an Ethernet system or an Econet Local Area Network. This Guide does not give advice on setting up or running an Econet network or AUN; information on Econet can be found in the Econet Design and Installation Guide and the RISC OS 3 Programmer's Reference Manual, and information on AUN in the AUN Manager's Guide.

## Structure of the Guide

This guide is divided into an introduction and four Parts. Part I is for experienced Level 4 network managers who wish to upgrade and get the Advanced Level 4 Server up and running with the minimum of fuss. Part II outlines the sequence of events that a new network manager should follow when creating an Advanced Level 4 Server network. Part

III describes how the Advanced Level 4 Server can be used and maintained in good running order, whilst Part IV gives guidance for the users of the Advanced Level 4 Server.

## Conventions used in this Guide

This Guide uses the following typographical conventions:

### Menu commands

Menu commands are shown in bold type, for example:

**Save Options**

### *Commands

*Commands and anything else you have to type in are printed in Courier typeface, such as:

```
*CAT
```

It doesn't matter whether you use upper or lower case for command names.

Variables to *commands are shown in italic Courier, like this:

```
*I AM userid
```

Substitute an appropriate piece of text for *userid*; a user name in this case. Decimal numbers are shown as *nnn* and hexadecimal numbers as *hhh*. Optional arguments are shown in square brackets. Alternative arguments are separated by a vertical bar, like this:

```
endaddr|length
```

This example shows that you need to give either an end address or a length.

### `Fileserver'

Where the word `Fileserver' has an initial capital, it means the Advanced Level 4 Server; where any fileserver is intended, no initial capital is used.

# Part I:
# Upgrading from the Acorn Level 4 Fileserver

# What's New in the Advanced Level 4 Server

Read this section if you are upgrading from an existing Acorn Level 4 Fileserver. If you are new to networking on RISC OS platforms, you can skip this section and go straight to Part II.

The Advanced Level 4 Server has been developed to deliver powerful file serving for schools. This product is a development of the Acorn Level 4 Fileserver which was started in 1989 and developed for RISC OS 2.00 machines fitted with 1 Mbyte of RAM and Arm 2 processors. With developments such as RISC OS 3 and the new Acorn StrongARM processor it has meant the Acorn Level 4 Fileserver and NetFS client software cannot deliver best performance from the hardware and operating systems now available.

The Advanced Level 4 Server has been designed to take advantage of the power of the Acorn Risc computers to enable a fast, reliable and cost-effective server system to be set up with minimal training or experience. There is a strong emphasis on the use of the Advanced Level 4 Server in educational environments. Upgrading from Acorn Level 4 Fileserver to the Advanced Level 4 Server is a simple process as the Advanced Level 4 Server is a natural evolution not a complete revolution. It is backwards compatible with Acorn Level 4 and supports all the previous functions.

The features which have been implemented are as a direct result of feedback from a number of valued customers and experienced users. This project is an ongoing development and new applications for the server system are planned for the future, so existing users and potential new users can be assured of continued support in the future.

## Improvements

### Speed and Performance

The speed at which applications can be loaded, directory viewers opened, files saved and users logged on is very important. Time should be spent working *with* applications not *waiting* for them to load. This server has several features which allow the users of the system to get the best possible performance from the hardware. It can make maximum use of the available bandwidth in the network, spreading the load between clients on the system. A *private communications*

*channel* is created for each connection to the server which allows the server to deal with many more simultaneous requests than hitherto.

## Reliability

One of the primary concerns is to make sure the software is as robust as possible. The aim is for the Advanced Level 4 Server to run for very long periods of time without the need for Network Manager intervention. A number of new features have been added to improve reliability, including: address validation and extra parameter checks to make sure rogue values do not cause a failure. Improved error reporting will allow network problems to be solved more easily and quickly.

## Shared !Scrap and Public Writable directories

It is now possible to allow directories to be written to by clients that do not own the directory. The client is also allowed to create new files and directories within a *public writable directory*. The most common use of this facility is for shared !Scrap and for applications such as Acorn's Intertalk software. This can also be used for setting up shared directories for workgroup projects or common subject areas. This also allows users to be logged in with their user identification and in addition to belong to a private group.

## Multiple Caches

There are three new caches in the server and one in the client software. The primary data cache is configurable and can make use of all the memory allocated to it. This is used to store data from files requested by clients and typically contains the most recent applications loaded by clients. This enables the server to be especially good at delivering the same application to many clients, avoiding repeated disc accesses. It is expected that typically 20 clients would need to load the same application, and in some situations this may be 40 clients.

The password file cache is used to enable logging on to the server in a fraction of the time taken by previous fileservers. This allows the space accounting to operate without degrading the overall performance.

Log file caching is used to allow all server functions to be recorded in a textfile for later analysis. The frequency of writing this information to disc and the maximum size of the log file are configurable.

## 32-bit protocol extensions

An extended version of the protocol has been implemented to allow the server and clients to handle files greater than 16 Mbytes in size. This was designed in conjunction with Acorn computers. Large databases, Web pages, movie images are typical of the kinds of data file where access over the network is required. This requires the new NetFS 6 (32-bit) to be running in the client to allow access to these files. The server still supports 24-bit clients at the same time as 32-bit clients.

## Password file extensions

User names can now be up to 21 characters long (without a dot separator). The Fileserver records the date and time the user last logged on. All the privileges can be individually controlled to allow custom users to be created. A 'group' user type has been added to simplify the management of groups of users.

## Management tools

These have been completely revised and updated. The emphasis has been on speed and the handling of the most common types of user structures found in schools. A new toolbar and help system have been added along with facilities for handling groups, modifying selections and user data management. All set up of the server and management of users is performed using this software. Particular attention has been placed on the handling of user databases of around 2000 users, as can be found on some sites. For example the user file is now held in RAM during editing to allow operations to be performed at maximum speed.

## NetFS 6 (32-bit) Client software

This software is the 'other end' of the Fileserver and has to be run in all client computers to take advantage of the speed and 32-bit functionality of the Fileserver. It does not need to be loaded on the Fileserver machine. The new version has been produced in conjunction with Acorn computers. This includes support for the new 32-bit protocol and a client directory cache. The cache prevents the client machine from calling the server several times for the same information and therefore increases performance and also reduces network traffic. Typically this increases the speed of operation by 2-3 times. The ability to be logged on as several users at the same server from one client machine is also supported by this version.

# Installing the Upgrade

## Preparation

Before starting the upgrade, make sure all users are logged off the network and shut down the server. You may also wish to back up important directories to insure against any mishaps. The old Acorn Level 4 Fileserver refers to versions up to 1.33. The Advanced Level 4 Server starts at version 2.00. Before doing anything make a backup of your existing !Server application on to floppy disc and then remove the floppy from the machine.

## Copying the Advanced Level 4 Server directories and files

Choose a location for the Advanced Level 4 Server files (eg. **$.AServer)** and create a new directory for this purpose. Copy the application directories !Server, !Manager and !Spooler from the Advanced Level 4 Server distribution disc into this new directory.

## Copying information from the old fileserver

The only file the new !Server can use without any changes is the Exports file. Then follow this procedure:

- Open the directory containing the new !Server application.
- Open the !Server application directory (hold down shift and double-click) and also the old !Server application directory.
- Delete the file called Exports supplied with the new !Server.
- Copy your existing Exports file from your old !Server application into the new !Server application (assuming you want to use the same exportexport settings).

## Converting an existing Acorn Level 4 Fileserver password file

The Advanced Level 4 Server has a new password file format. Therefore it is necessary to convert the old password file to avoid having to re-enter all the users again. This is done in the following way:

- Run the new !Manager application.
- Open the old !Server application and the new !Server application directories.

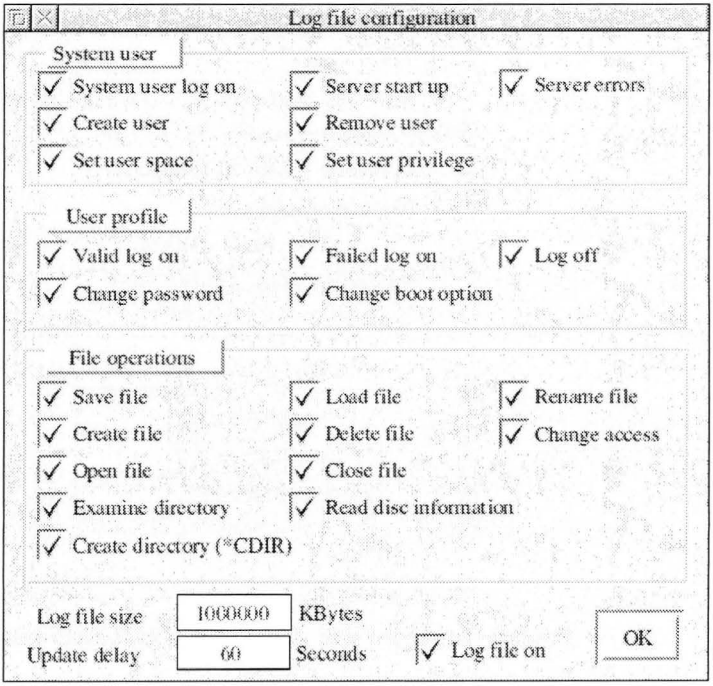
- Drag the file called 'Users' from the old !Server directory to the !Manager icon on the iconbar. A new filer viewer will then be opened showing the contents of this old password file. If there are any users in the form *groupname.username* then a new group user will be created called *groupname* and the users called *groupname.username* will be created as belonging to that group with their existing user name unchanged.
- Click on the save tool on the toolbar in the filer viewer.
- Change the filename to 'Usersfile'.
- Drag this new password file to the new !Server directory.

## Configuring the new features

After installing the new !Server application double-click on the !Server application. There are two areas where new features can be set up. They are both accessed from the main menu from the iconbar. Press the menu button over the !Server icon and select the option required.

### Log file...

This opens a dialogue box with buttons that control which server events are recorded in the Log file.

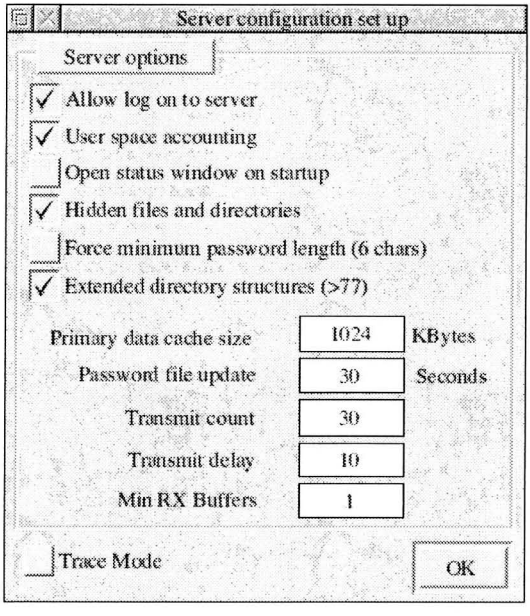



In addition the following options can be specified:

- The maximum size of the log file in the Log file size box. The value is in Kbytes.
- The frequency of log file updates in the Update delay box. This value is in seconds.
- Whether the log file is updated or not is controlled by the Log file on button.

## Set up...

This opens a dialogue box which controls how the server is set up. The new options are:




- Primary data cache size - Typically 1024 Kbytes will be sufficient.
- Password file update - every 30 seconds is recommended.
- The other values Transmit count, Transmit delay and Min TX Buffers should be left as supplied.
- Trace Mode which should be off when in normal use. This is used to output more detailed information about server activity to help track down problems.

When you have finished making changes click on OK then select the **Save choices** option from the main menu.

## Hidden directories

The Advanced Level 4 Server now uses the public read and public write attributes to determine if a file or directory is hidden. This feature is enabled if the *Hidden files and directories* button is turned on. The old !Server used the Locked attribute to indicate this, the Advanced Level 4 Server does not. Therefore if you have directories that are meant to be hidden you will need to check the attributes (and change if required) ie:

- Directories that anyone can see need public read permission.
- Directories that anyone can write to need public write permission.

- Directories that are hidden must not have public read or write set.

The new !Server application should now be ready to use.

# Part II:
# Getting started

# Welcome to networking

If you are new to the world of networking, welcome. You will be pleased by the number of advantages that a network gives over a collection of standalone stations. The more obvious ones are listed below. If you are already familiar with networking, you can probably add to the list.

Firstly, networking simplifies the task of management. In the classroom, ensuring that there are sufficient copies of an application to go round, making sure that they are all the same, have the correct version number and that none goes missing can be a problem. Even with hard discs on all stations, it is easy for whole directories of information to be accidentally or maliciously deleted. A network solution means that applications that are required by many stations can be kept and managed centrally.

Secondly, it adds security. Users can copy important data to a fileserver to be held safely. If copies are made regularly, data should never be lost. Relying on individuals to manage their own back-up copies on floppy disc, for example, often results in hours of work going astray for a variety of reasons.

Thirdly, it enables expensive peripherals such as printers, teletext servers and graph plotters to be shared between stations.

Lastly, it enables people working on related problems or projects to share data between them, and use electronic mail to send messages to each other or to other machine users on distant sites.

The Advanced Level 4 Server consists of three major applications and a number of example files that make the task of setting up the Fileserver and client stations as straightforward as possible. Networking solutions are flexible as well as powerful, so there are examples of solutions that suit different needs; a primary school has very different requirements from those of a university department.

# 1 Introduction to the Advanced Level 4 Server

The Advanced Level 4 Server is a fileserver for computers connected together on an Acorn Universal Network, a Nexus network and/or Econet. It extends the facilities provided to users:

- by providing space to store files
- by allowing users to share network resources, such as printers
- by making information available to all users on the network
- by providing a print spooler so that users can add their files to a print queue to be printed when the printer is available.

The Advanced Level 4 Server can be controlled from the RISC OS desktop, and is intended for use in this way. The desktop interface allows you to manage the Fileserver and print spooler easily, using the usual RISC OS procedures.

## Fileserver applications

The Fileserver has three applications:

- !Server
- !Manager
- !Spooler.

Each of these appears on the icon bar as an icon when you load it. You need to load !Server before anyone can use the Fileserver, and !Spooler before users can send files to the print spooler queue, but you will only need to load !Manager when you want to carry out management tasks.

### !Server

The !Server application performs fileserver functions. You can monitor use of the Advanced Level 4 Server by recording events in a special file, called the logfile, and displaying a window that shows how the Fileserver is being used. The logfile stores a record of what users do with the Fileserver. You can choose the events that are recorded in it so that you have, say, a record of every time someone logs on to the Fileserver, or saves a file.

### !Manager

The !Manager application provides the routine management tasks you will need to perform to control the use of the Fileserver. These include

adding and removing users, allocating space, and setting user privileges and boot options.

### !Spooler

The !Spooler application allows you to set up and run a print spooler. A print spooler makes the same printer available to many users. The spooler builds up a list of files that need to be printed, and sends each to the printer in turn. The !Spooler application allows you to set up and manage the print queue. You can, for example, close down or suspend the queue or remove files from the queue so that they will not be printed.

### Other uses of the Fileserver station

You may use the station running !Server for other desktop applications, although performance will suffer if users are copying files and loading applications. Also, applications that 'take over' the machine for significant periods will result in the error message `Not listening` being reported to network users. In general, it is best to use the station running !Server only for network service and minor management functions.

## The Network Manager

The Fileserver needs a Network Manager, who is a user with special privileges over other users. These privileges give the Network Manager the ability to carry out management tasks such as setting up the network, maintaining security of information, adding and deleting users and allocating them storage space, and carrying out routine maintenance and fault-finding tasks. These privileges also give the Network Managers access to all information on the network.

This privilege level may be given to one or more user identities. The Advanced Level 4 Server distribution disc has one such user identity already provided. This user is named SYST, and initially has no password set; **you should set one as soon as you install !Server to prevent others using the SYST identity.** This is described in the section *Changing the SYST* user identity on page 80.

# 2 Hardware to use with the Fileserver

The Advanced Level 4 Server is a software product, but you will need a certain minimum hardware configuration in order to install and run it. This chapter explains what hardware you will need, and what you can use.

## Minimum requirements

To make use of the Fileserver, you will need *at least* one RISC OS computer connected to an Acorn local area network and *at least* one other RISC OS, BBC or Master Series computer attached to the network. The RISC OS computer will be used to run the Fileserver software and must have:

- a hard disc unit installed
- at least 4MB of memory
- RISC OS version 3.10 or later.

You can run the Fileserver on a station that does not have a monitor or keyboard attached. You will not be able to use !Manager and !Spooler from the same station in this case, unless you first connect a monitor and keyboard.

## Supported hardware

Once you have met the minimum requirements, a maximum of 128 users can be logged on to the Fileserver at any one time. If you have several networks linked together with bridges or gateways, you can make the Fileserver available to users on any of the connected networks.

On the Fileserver station itself you can use and make available to users any of the available storage media using these filing systems:

- ADFS
- SCSIFS
- NFS
- RAMFS
- CDFS
- LanManFS
- any other FileCore-compatible system.

The section entitled *Controlling the filing systems exported* on page 35 gives more details.

The Advanced Level 4 Server does not support the Acorn Atom, or System 3, 4 or 5 client computers, or BBC computers using NFS versions lower than 3.6. You cannot use L-format floppy discs with the Fileserver. !Server should be used with caution with a Master512 running DOS Plus with Econet or from a PC Ecolink card.

Although a large number of users may be connected to a single Fileserver, there is a practical limit to the number that can effectively use the Fileserver at any one time. It is likely that if more than forty users with RISC OS stations, or more than about eighty users with BBC or Master series stations, use the Fileserver at the same time for accessing, working on and saving files, the Fileserver performance may be significantly reduced. If the Fileserver is used mostly for electronic mail and other data exchange, many more users can be accommodated before performance is degraded.

You should make use of switches, bridges or gateways to link small networks together rather than overload a single, large network.

## CD-ROM and the Advanced Level 4 Server

The Advanced Level 4 Server can export, as separate 'fileservers', any filing system that conforms to the standard filer interface. This includes CD-ROMs.

CD-ROM is a slower medium than hard disc drives, and therefore must be used with caution as performance over the network may not be satisfactory. Although data can be read from the disc quite quickly, it takes a relatively long time for the read head to locate data (this is the 'seek time'). When several stations are reading files from the CD, a lot of time is wasted as the read head moves between different areas of the disc. This means that while a CD-ROM can be used satisfactorily with data such as clip art and encyclopaedic information, it may be too slow to be viable for serving applications to a large number of stations. It is an excellent way of increasing the amount of information available to users, but only when used in conjunction with other high-speed delivery systems.

If you want to export the CD-ROM drive, read the section entitled *Changing CD-ROMs* on page 66 for advice.

# 3 Designing the Fileserver directory structure

This chapter offers some guidelines on how to structure file systems and directories so that users and software can move between environments easily.

## Discs and filing systems

One of the most important tasks performed by the Fileserver is to store information for people using computers connected via an AUN or Acorn Econet network.. A Fileserver can give users access to its own hard disc, an area set aside as a RAM disc on the Fileserver station, another hard disc unit (or floppy disc) on the same station, a CD-ROM unit, a SCSI hard disc, or to a UNIX server over a network using the TCP/IP product and NFS or an NT server using LanManFS.

If the Fileserver station has more than one disc or filing system available, you may choose to export (make available to users) any or all of them. Each that you export is represented by its own icon in FS list displays. Information on making different devices and filing systems available to Fileserver users is given in the section *Controlling the filing systems* exported on page 35.

## How information is organised

Information is organised into a hierarchical structure of directories and files on a disc. This system is described in the RISC OS 3 User Guide. The Fileserver allows you to allocate users or groups of users their own directories, control their access to other files and directories, and provide frequently-used material in directories available to all users.

A directory on the Fileserver may contain up to 255 entries although in normal operation ADFS and SCSIFS restrict directories to 77 entries.

### Extended directories

When looking at directories at the Fileserver station you may see directory icons with no names. These are used to extend the number of directories from 77 to 255 and should not be deleted. Because of the way extended directory handling operates for directories containing more than 77 entries, a `*Cat` command given from a BBC or Master machine will sort the files alphabetically for each 77 file section only.

## The `root' directory

The top level directory of the Fileserver that is visible to users over the net is known as the Fileserver root directory. This does not necessarily have to be the root directory of the Fileserver's hard disc, but may instead be a directory at a lower level (known as the export root, or *mount point*). All files that are above the mount point will be inaccessible to all network users, and can hence only be accessed from the Fileserver itself. This feature is useful to protect system resources (such as the Advanced Level 4 Server software itself) from users.

Users do not generally use the Fileserver root directory directly, but work within their own directories (see below). However, they will need to display a directory display for the Fileserver root if they want to gain access to application directories and other users' directories.

## User directories

Generally, each user has a User Root Directory, or URD, to hold files and sub-directories. Within each user directory, a user may build up a structure of files and directories. Users can create, alter and delete their own files and directories, but do not usually have such privileges over files and directories in other users' directories. The user directories are often stored in the Fileserver root directory.

## Group directories

You may also set up group user directories. In this case, one user may own the directories of other users within the group. All users in the group have the usual access to read, write, create and delete their own files, and the group owner also has these rights over all files and directories in the group. The group root directory is effectively the group owner's user root directory. A group directory can appear anywhere in the directory structure. For example, in Figure 1 below:

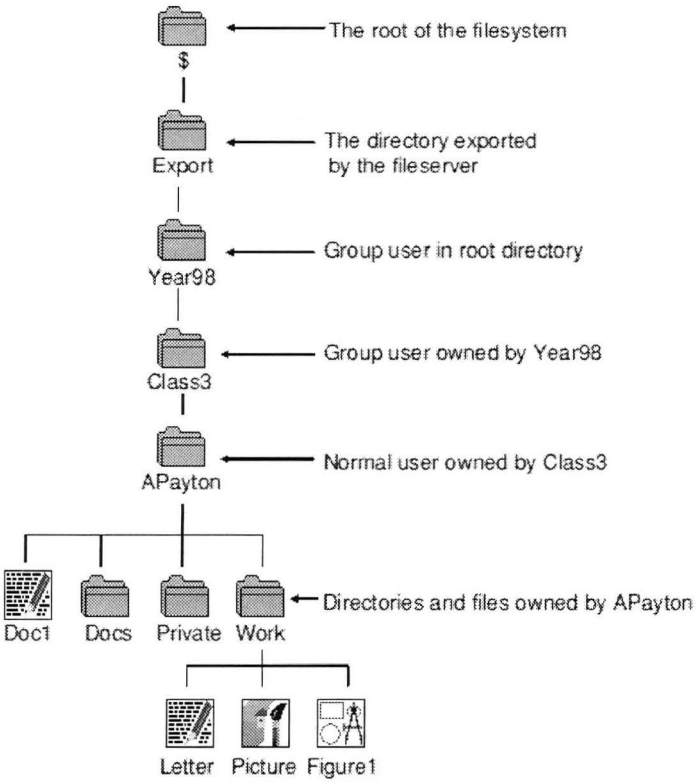



**Figure 1 - An example group directory structure**

## Library directories

The root directory also contains at least one library directory which holds transient commands. There are three library files on the Advanced Level 4 Server distribution disc. These are

- ArthurLib: for RISC OS machines on the network (if required)
- Library: suitable for BBC machines on the network
- Library1: suitable for Master 128 and Master Compact computers on the network.

You will need to copy one, two or all three of these on to the Fileserver hard disc depending on which type(s) of machines you have on the network. The appropriate library will be accessed by the Fileserver whenever necessary.

### Application directories

You may want to keep copies of frequently-used files, programs and applications in a directory to which all users have access. If you copy applications into this directory, you will need to set all files in the application directory to have public read access.

Directories containing large numbers of applications should be avoided on fileservers because a boot file for each application is run and the sprites read each time a directory display containing applications is opened. This can cause considerable network traffic and reduce response speed. Little-used applications should be kept further down the directory structure. It is a good idea to group similar applications together in their own directories ie: Databases, Graphics, Multimedia etc.

## Resource applications

As part of the booting sequence of any computer, whether it is a discless machine on a network or a private machine with hard or floppy discs, certain resources must be identified to the operating system. These are

- !System, which holds any extra or updated modules which may be required by applications
- !Scrap, which dictates where temporary files are to be redirected
- !Fonts to allow applications to discover which fonts are available.

The three applications, !System, !Scrap and !Fonts, need to be treated in different ways, and are discussed below.

### !System

In general, there should be one !System available to a computer and this should contain all the modules you have. It is common for software vendors to supply updated modules that are required by new applications as a !System directory on the disc with the application. Some users then keep a !System with each application; you should not do this. This !System should be available on or near the root or mount point of any exported drive that users may log on to directly. All the files inside !System must have public read access, but not public write access. The directory should also have public read permission set otherwise this could render it invisible to Advanced Level 4 Server users.

In situations where it is not possible to keep only one copy of !System, additional system paths should be appended to System:, rather than setting System$Path explicitly. This may be appropriate if non-Acorn shared resources are distributed as part of an application. Consult the example !ArmBoot on the Advanced Level 4 Server distribution disc if you need to do this.

Older versions of !System had a scrap directory inside them, but since this causes great problems on a network, a separate !Scrap was developed. You should delete the !Scrap inside the old !System and only use the new version for all machines.

### !Scrap

!Scrap allows temporary files that are generated by applications for internal use or for passing data between applications to be redirected to an appropriate place.

With the Advanced Level 4 Server, it is no longer necessary for each user to have a copy of !Scrap in his or her User Root Directory (URD). Instead, the !Scrap application on the Fileserver can be shared by all users.

It is recommended that the !Scrap application is inside the !ArmBoot application which is in the Library directory. See the release note supplied with this product for the latest information. All the files inside !Scrap must have public read access, but not public write access. Exceptionally, the ScrapDirs directory should have public read and write permission set. The client machine must then be set up run the !ArmBoot application to 'see' the !Scrap application during its boot sequence in and order to set up the necessary system variables. See the section *Copying the !Scrap* Application Directory on page 39 for further information.

### !Fonts

!Fonts should be treated in much the same way as !System. It is possible that !Fonts will become quite large, so only one copy should be present on a network to be shared amongst users. However, it is very important to keep the number of fonts directly accessible to an absolute minimum, otherwise application loading will be slowed down very significantly. !Fonts needs public read access, but the directory should not be locked. Additional fonts may be appended to Font:. For RISC OS 3 machines, which have some basic fonts held in ROM store, use NetFonts in the Extras directory on the Advanced Level 4 Server

distribution disc; there is a text file explaining how to use this to maximise performance on different computers.

## Boot files and applications

Boot files for client stations are required to set configurations, load modules and start applications as required. Depending on the type of primary storage, (floppy, hard disc or network) boot files may vary a little. Boot files are discussed elsewhere and some examples are given on the Advanced Level 4 Server distribution disc. However, boot files have some impact on directory structure, especially in the case of fileservers, where several different boot files are required.

Figure 2 - Directory Structure Example for RISC OS 3.1 and Figure 3 Directory Structure Example for RISC OS 3.50 and later versions below show simplified representations of typical Advanced Level 4 Server systems. Both show the mount point as **$.Export**. A boot file is usually required to start the Fileserver on start up. This is shown in the diagrams as the application !Boot, and because it has not been *exported* (ie is above the mount point), it will not be visible to client stations.

For client stations of the Fileserver there is no Boot directory containing a boot file - that is, there is no URD specified for the user Boot. This is because a machine logging on would have ownership of this directory and therefore be able to delete its contents. Instead, there is an !ArmBoot application in the exported root directory (in the example this is called **$.Export**), with public read access. This will then be obeyed by a client station as it will be placed in the root directory with public access rights only if no Boot directory is found.

BBC and Master series machines will look in the Library or Library1 directories for their boot files, as no Boot directory exists and the !Boot file is not readable by these machines.

Although not mandatory, guidelines for structuring directories, especially in the case of fileservers, should be taken seriously. It is recommended that the mount point be **$.Export** and not the root directory (**$**) of the disc. See the section *Choosing the mount point* on page 34 for further information.

Although the Fileserver is capable of having up to 255 files or directories in a directory, in many cases this number will be far too high for ease of use. In general, it is wise to aim for a reasonable compromise between height and depth of structures.

## Directory structure

The overall directory structure should be efficient and appropriate; access rights need to be considered, and some guidelines are given here.

The structure of the Fileserver root directory will look something like one of the examples on the following pages when you have added user directories and libraries.

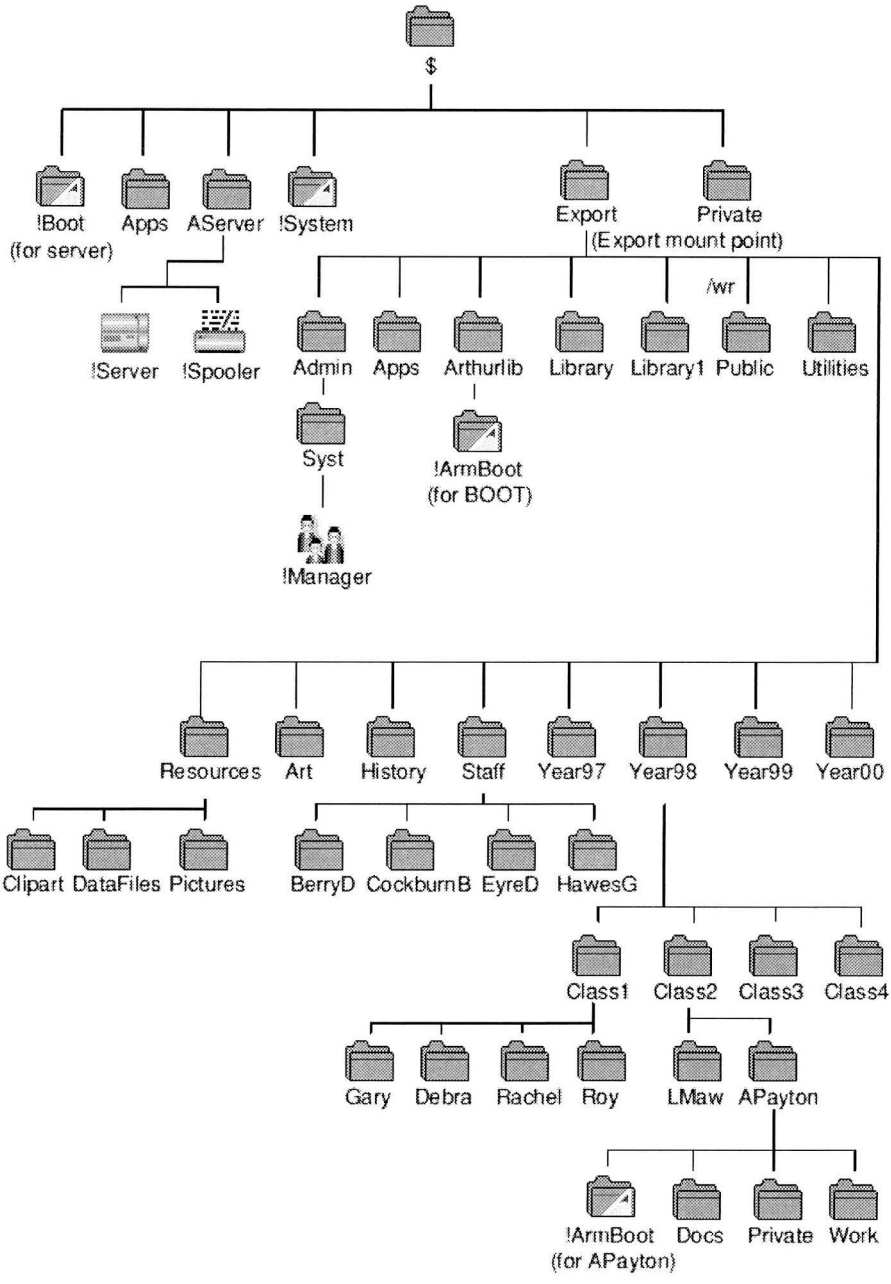



**Figure 2 - Directory Structure Example for RISC OS 3.1**

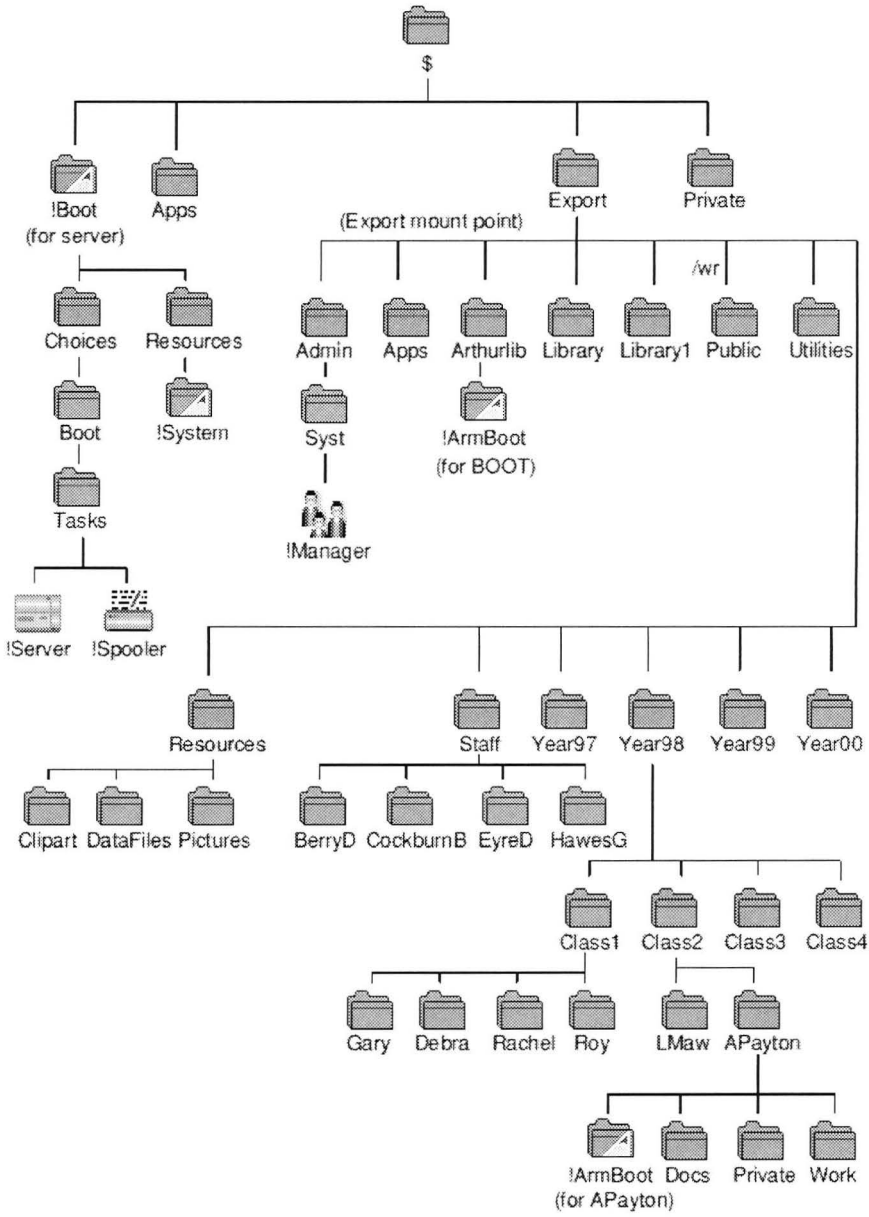



**Figure 3 Directory Structure Example for RISC OS 3.50 and later versions**

From a Client station, the Fileserver root directory is identified by the character **$** (which is the export mount point). Note that in the examples above, this is *not* the Filerserver's hard disc root directory, which is shown as **$**. A user's own root directory is identified by the character **&**.

When users log on to the Fileserver, they automatically see their own user root directory. Using the directory structure shown, if APayton logged on, a directory display for the directory APayton would appear showing the objects !ArmBoot, Mail, Private and Work. If the group user directory Class2 was on a hard disc drive 4 called Economics, the directory display would have the title net#Economics.Year98.& or net::Economics.Year98.& (depending on the version of RISC OS fitted to the station).

Similarly. when a system user or a user without a directory logs on, the fileserver's exported root directory is shown, with the name net#Economics:$ or net::Economics.$.

### Pathname length

It is important to keep directory names short as pathnames cannot exceed 255 characters including full stops (.). The limit includes any part of the pathname that lies between the real root of the Fileserver disc and the user's root directory, so if the disc is exported some way from the real root, pathnames that don't look too long when a user saves a file may be too long to be accessible over the network.

## Hidden objects and access rights

The hidden objects facility allows you to selectively hide files, directories, and applications, preventing them from appearing in directory displays opened by users who don't own them. If you enable hidden objects:

- Files and directories without public read access or public write access are hidden.

This is a powerful way of discouraging hacking around the system. All applications in common areas must have public read access set for all files inside the application if hidden objects are enabled. The section *Hidden objects* on page 61 explains how to enable hidden objects.

This facility is in addition and is more flexible than just locking the item, which will also hide the file from users' directory displays.

# 4 Installing the Advanced Level 4 Server

Before you install the Fileserver and copy information on to it, you may want to format the hard disc of the station you are going to use.

## Formatting the hard disc

The reason for this is because the default way in which a disc is formatted is optimised for a single-user workstation, on which the total number of directories is likely to be small, and the number of files each contains is likely to be large. However, on a fileserver which is used to support many users, there may be many directories for each user, not all of which may be used.

Each time a directory is created, there is a minimum size allocated to the directory and its contents. If this minimum size is rather large, and there are very large numbers of rather empty directories on the fileserver disc, then much space on the fileserver can be lost.

### Large File Allocation Units

The minimum directory size is directly related to the Large File Allocation Unit (or LFAU) specified when the disc is formatted. On a large disc (200 MBytes and upwards) the default LFAU may result in the creation of directories as big as 15Kb, which although fine for the hard disc of a stand-alone machine, may be far from ideal for the fileserver. The following table lists some common values and the minimum corresponding disc space used for each directory (to the nearest KB):

| LFAU | Directory size (KB) |
|---|---|
| 256 | 4 |
| 512 | 8 |
| 1024 | 15 |

The size of the LFAU is a compromise between disc storage space and the file retrieval speed. You may wish to experiment with different LFAU values before transferring all the data onto the disc, although generally the following rules apply:

- If the LFAU is large then the data transfer rate will be faster, but directories take up more space, and slightly less data can be stored on the disc.
- Conversely, if the LFAU is small then the data transfer rate will be slower, but directories take up less space, and slightly more data can be stored on the disc.

Note that small files are stored in the sectors allocated to the directory structure, so you don't `lose' all the space allocated to a directory.

On the Advanced Level 4 Server disc there is a program Read_LFAU which enables you to interrogate the disc for information about the size of its LFAU. If this is large, and the difference between counting all files and the free space on the disc is significant, you may choose to reformat the disc at an appropriate time, using a smaller LFAU.

## An example

To help you understand this issue, let's look at an example of a school which has decided on a policy of giving each student an area on the network for the duration of their time at the school. The school has 5 years with approximately 200 students in each year. The network manager therefore creates 1000 user accounts with the directory structure shown below:

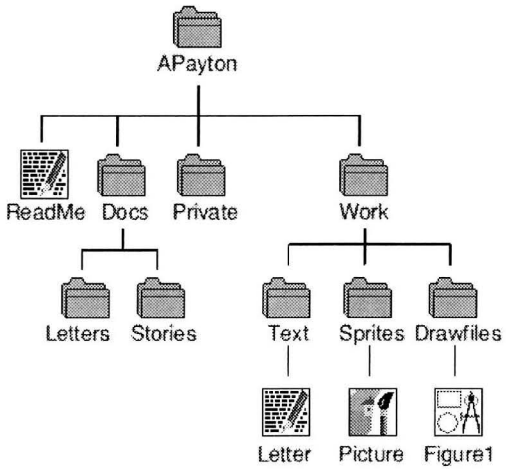



**Figure 4 - Typical directory structure for a student in a Secondary School.**

The normal default LFAU for an A5000 is 512, which - from the earlier table - corresponds to 8Kb directories. So, using the default directory structure shown above, we can see that just the empty directories will allocate 72Kb of the disc space to each student (i.e. 9 directories @ 8Kb per directory). For 1000 students this will amount to almost 72Mb of disc space. In contrast, an LFAU of 256 would make the directories half the size, and so the same directory structure would only require 36Mb of disc space.

## Reformatting the disc

If - on the basis of the above - you do decide that you need to reformat your hard disc, you should refer to the instructions for the appropriate utility. HForm is suitable for most non-SCSI drives; this is described fully in the RISC OS 3 User Guide. Use SCSIDM for Acorn SCSI drives; this is described fully in the SCSI User Guide. We recommend you reformat small discs (about 40MB) to a 256 byte LFAU, and SCSI drives to as small an LFAU as reasonably possible.

**All data is lost from the disc during formatting. Ensure that you have backed up the contents of the disc before reformatting any disc which contains valuable data.**

## Naming the hard disc

Once you have formatted it, give the hard disc a suitable name. You can do this using Name disc from the hard disc drive icon bar menu, or *NameDisc from the command line or a command task window. For example:

```
*NameDisc 4 History
```

The name you give will be used to identify the Fileserver on the network. This name must be unique. Filing system names should not start with a number; if they do, they won't be exported. For example, use `Level4Disc', not `4thLevel'. Only use the characters A-Z, a-z, 0-9, -, _, and / in filing system names.

If you later change the disc name after the Fileserver is installed, reset the Fileserver after changing the name of the disc. Close it down and then restart it, and tell users the new name of the disc.

## The Advanced Level 4 Server distribution disc

The Fileserver disc contains these files and directories:

- !Server
- !Spooler
- !Manager
- !NetFS
- Extras.

Extras contains some example files that may help you to set up client stations to boot from the network.

Which files you need to copy to install the Fileserver depends on whether you want to run it from the desktop or in non-desktop mode and which types of client station will be used with the Fileserver. This information is given on the following pages.

Don't alter the access rights to any of these files as it is important that privileged functions such as SetStation are not available to unprivileged users.

## Installing the Fileserver

To install the Fileserver follow the steps described below.

### Choosing the mount point

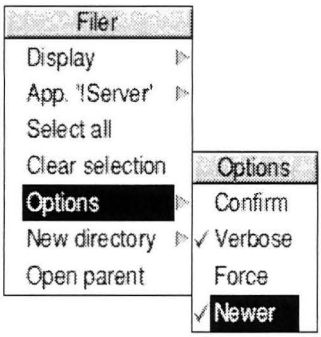
The mount point is the location within the filing system which is exported to users on the network as the root of the Fileserver.

We recommend that you use a mount point called $.Export if you keep information on the Fileserver that will never need to be exported, as it is impossible for users to access any information above the mount point. (This may include administrative data or diagnostic programs, for example.)

You may place the Fileserver application anywhere on the disc; if you are exporting the disc at a point other than the root directory, we recommend that you place the Fileserver application above the mount point so that it is not visible to network users. Alternatively, put the Fileserver application in a directory with no public read or write permission so that it is not visible when the hidden objects facility is enabled.

### Copying Advanced Level 4 Server directories and files

Set the copy options to overwrite earlier versions of files with the same name by ensuring the **Newer** item is selected in the Filer / Options menu:




Suitable copy options are also set by pressing F12 and typing:

```
*Set Copy$Options A N R
```

This makes these settings:

- A: retain the access rights set for the file or directory.
- N: only copy the file or directory if it is newer than the one with the same name on the destination disc.
- R: copy all sub-directories and their contents.

There is more information on setting copy options in the *RISC OS 3 User Guide* in the chapter *Star command summaries*.

Copy the application directories !Server, !Manager and !Spooler into an appropriate directory of the hard disc of the computer you want to use to run the fileserver. This may be the root directory, or another directory as discussed above. You can copy !Manager and !Spooler on to different stations at this stage if you prefer, or you can copy them from the Fileserver into disc space on the computer you are using when you want to use them.

## Controlling the filing systems exported

You can export any of the standard filing systems available on the computer running !Server. This means that users will be able to save to or access files from other disc drives, CD-ROMs and so on. The supported filing systems are:

- any file-core compatible filing systems (eg ADFS, RAMFS, SCSIFS, NEXUS, IDEFS)
- CDFS
- LanManFS (NT server, Windows '95, Windows for WorkGroups)
- NFS (UNIX systems)

To set the filing systems available to users you need to alter the file Exports kept inside the !Server application directory. To do this, hold down Shift and double-click on the !Server icon in the directory display for the Fileserver hard disc. Open the text file called Exports.

## The default Exports file

The Exports file as supplied looks like this:

```
| Device file for export of local file systems
| All of the information for an export must be provided
| except the optional disc title
| Filing system, SWI prefix, Drive number, Mount point,
| Disc title
|
| Filing systems will be exported in the order they
| appear
| in this list.
| Note that A5000 IDE Drives are treated as an ADFS
| Drive

| Mount LanManager file system such as WfWG or NT
Server
|
|LanMan   LanMan   LanMan:Connect PCDisc NTServer C

|ADFS    ADFS     0   $
ADFS    ADFS     4   $.Export AServer
|ADFS    ADFS     4   $.Public.Network.UsersDirs
|ADFS    ADFS     5   $

| This is for Acorn or Oak SCSI interface
|
|SCSI    SCSIFS   4   $.Export
|SCSI    SCSIFS   5   $
|SCSI    SCSIFS   6   $

| This is for Lindis SCSI interface
|
|SCSI     SCSI     4   $ SCSI

| SJ Research Nexus
|
|NEXUS   Nexus    4   $ Nexus

|RAM     RamFS    0   $  Ramdisc
|CDFS    CDFS     0   $  cdrom

| Now for network based file systems
| Filing system, SWI prefix, Logon command
| Passwords may not be used
|
|NFS     NFS      nfs:Logon -host unix guest
```

```
|NFS      NFS       nfs:Mount -host unix unix /
```

All lines beginning with a vertical bar ( | ) are comment lines. With the file as it is here, the only filing system that will be exported is your ADFS hard drive 4. You may want to alter the selection of filing systems exported (perhaps because you buy new equipment, such as a CD-ROM drive). Before we look at specific examples of how to do this, here are a few general points:

- Before altering the list of exported filing systems, close down the Fileserver and then restart it afterwards. This is especially important if you are removing filing systems from the list.
- Filing systems will be exported in the order in which they appear in the list. The first in the list will automatically be used at logon for non-desktop users. If you are going to export the floppy disc drive ensure this is not first in the list, as it will become the default drive if it is.
- From the client machine the exported fileserver discs will start at drive number 0 and the second disc will be 1 and so on. The fileserver station number, disc number and disc title are displayed on the client machine using the *ListFS command.
- If none of the filing systems listed in your Exports file are available, !Server will give an error message, and refuse to start. Otherwise, when you start !Server it will just ignore any filing systems that are unavailable, warning you of this.
- If you are using and exporting more than one filing system with the fileserver, a copy of the Library and Library1 must be available on each drive that may contain a home directory for a BBC or Master machine.
- You cannot export network filing systems such as NetFS.

## Exporting local filing systems

If you want to export a filing system that is already in the list but is commented out, simply remove the vertical bar in front of its name, and the line will then take effect. For example:

```
SCSI SCSIFS     4     $
```

would export SCSI drive 4.

You can add other local filing systems that aren't already in the list by following the format described in the file; that is:

```
Filing_system SWI_prefix Drive_No.   Mount_point
```

In fact, the line can also include an export name:

```
Filing_system SWI_prefix Drive_No.   Mount_point Export_name
```

which is the name used for the exported filing system. We strongly recommend that you use an export name. In particular, you must use an export name to export CD-ROMs, RAM discs, and discs with long disc names.

For example:

- To add a second hard disc drive 5 with the mount point `$.Teacher', you would need to add either the following line (which doesn't use an export name):

  ```
  ADFS ADFS 5 $.Teacher
  ```

  or this line (which is preferable because it uses an export name - `Teacher'):

  ```
  ADFS ADFS 5 $.Teacher  Teacher
  ```

- To export CD-ROM drive 0 you must use an export name. In this case, it is `My_CDROM':

  ```
  CDFS CDFS 0 $ My_CDROM
  ```

- To export your RAM disc, you must also use an export name:

  ```
  RAM RamFS 0 $ RamDisc
  ```

## More about CD-ROMs

The reason that CD-ROMs must use an export name is to avoid confusion if the disc is changed or if the same disc is present on the network from more than one Fileserver. If you don't declare a name in the exports file, the drive will be exported by the disc name of the disc present when the Fileserver started up, if this is a legal RISC OS name. If the name is illegal, it will be exported as FSDisc n where n is the logical drive number.

The Fileserver always assumes that a CD-ROM has public read access.

## Exporting network filing systems

In the supplied Exports file, there are two lines giving an example of how an NFS server would be mounted and exported. When uncommented, they look like this:

```
NFS NFS  nfs:Logon -host unix guest
NFS NFS  nfs:Mount -host unix unix /
```

The first line checks on the host named unix that the user guest is a valid user. If the user has a password set, your Fileserver will wait for you to type it in, but will not prompt for it. While it is waiting, your Fileserver will stop working, and appear to `hang'; it will only resume working when you type in the password.

The second line mounts the root directory (`/') of the host unix as the current NFS user (which is guest, since you just logged on using that name). The mount is given the mount name unix, and exported with that name. If this mount is already made when you run !Server, you'll get an error, because you can't make the same mount twice.

You can add other network filing systems using lines with the format:

*Filing_system SWI_prefix Logon_command*

For example, adding this line immediately after the above examples:

```
LanMan LanMan LanMan:Connect NTServer Geology Geology
```

would mount the directory Geology on the NTServer. The mount is named Geology, and exported using that name.

## Installing the Fileserver for non-desktop use

This is not supported by this version.

## Copying the !Scrap Application Directory

- This is now inside the !ArmBoot application supplied on the support disc and should be copied into the exported Library directory. See the next section for more details. The !Scrap application as supplied has the public read permissions set for all files, and the public read and write access permission for the ScrapDirs directory. To ensure these attributes are retained make sure the correct copy options are set. To do this use the options from the RISC OS filer menu and make sure **Force** is ticked.

There is more information on setting copy options in the *RISC OS 3 User Guide* in the chapter *Star command summaries*.

## Copying Utils and Library directories

You will also need to copy the library directories on to the Fileserver station. These are on the Support disc supplied with the Fileserver. You should copy these to the Fileserver mount point.

If you are using both RISC OS and non-RISC OS stations on the network, you will need to load different libraries for the different types of machine. You will need to include ArthurLib for RISC OS stations, Library if you have any Model B stations and Library1 if you have any Master series stations using the Fileserver. When you set up a new station, you can configure it to select the appropriate library automatically. To configure a Master series computer, type

```
*Opt 5,1
```

and for a RISC OS station, type

```
*Configure Lib 1
```

A BBC station does not need any special configuration.

## Setting the station number

To set the station number of the Fileserver, use `$.ArthurLib.SetStation`. You can run it by double-clicking on its icon; a window appears prompting you for the new station number. If you decide you do not wish to change the station number, press the Esc key.

You may choose any number between 3 and 254, but 254 is conventionally the number used for the first fileserver on a network. If you change the station number after installing the Fileserver, remember that users will not be able to communicate with the Fileserver after you have changed its station number. Make sure all users have logged off before you change the station number, and tell them the new station number so that they can log on to the Fileserver again after you have changed it.

## Copying information from an old fileserver

If you are replacing an old fileserver with the Advanced Level 4 Server, you will probably want to copy some of your information from the old fileserver to the new. When you copy directories from an existing fileserver, don't start the copying process from the Advanced Level 4 Server, as the normal ADFS limit of 77 files per directory applies. Use a third machine, logged on to both fileservers, to initiate the transfer. From the desktop, you may then just drag the top level directories from the old fileserver to the new one.

## Starting up the Fileserver

To start !Server, double-click on its icon in the directory display.

## Using a boot file

Once you have loaded !Server on to the hard disc unit and have correctly installed the modules, you will be able to run it by double-clicking on its icon in the directory display, and run the !Spooler and the !Manager applications by double-clicking on their icons. However, if you want to load one or more of these automatically each time you turn on the Fileserver station, you can create or edit a boot file to do this for you. A boot file will be executed each time you turn on or reset the machine, as long as you set the autoboot option. The section *Setting the Fileserver* to start up at power on on page 47 explains how to write a suitable boot file and set it to run whenever the computer is turned on. The file SystemBoot on the Fileserver Support disc is an example of a suitable boot file, and the directory Extras on the Advanced Level 4 Server distribution disc contains further examples.

## !Server configuration

To gain the best performance from the Fileserver, make sure the ADFS directory cache is enabled if an ADFS disc is to be the prime exported drive. To do this you can use the command

```
*Configure ADFSDirCache 64K
```

at the command line.

Performance may improve if you increase the ADFS buffers to 64. Use the command:

```
*Configure ADFSBuffers 64
```

For Acorn SCSI drives, a suitable value for the directory cache is 64K. The command you need to type is

```
*Configure SCSIFSDirCache 64K
```

For non-Acorn SCSI drives, consult the manufacturer's documentation for guidance.

With CD-ROM drives, a suitable value for buffers is 128K

```
*Configure CDROMBuffers 128K
```

## Installing and running !Manager

It is possible to run !Manager from the same station as the Fileserver. However, it is best to run !Manager on a station other than the Fileserver. This gives the best performance on the Fileserver. It is also safer to change users' profiles from a remote station as changes can be lost if a user is accessing the Fileserver while you are altering the

profile. If the mount point of the filing system is not the disc root directory, you should always create user and mail directories from a remote station as !Manager cannot tell where to put these directories if you create them from the Fileserver station itself.

If you like, you can store !Manager on the Fileserver and run it from another station, but read the section *Running !Manager from* a station other than the server below before you do this.

## Running !Manager from a station other than the server

### Under RISC OS 3.1 or later

If you are using RISC OS 3.1 or later you can run !Manager from any filing system you like: either local storage (such as a hard or floppy disc), or from a Fileserver. To run !Manager, double click on its icon; the !Manager icon appears on the icon bar.

## Running !Manager from the same station as !Server

If - despite the warnings we gave earlier - you decide to run !Manager from the same station as !Server. Install the !Manager application by copying it to the server's hard disc. To run !Manager, double click on its icon; the !Manager icon appears on the icon bar.

## Using !Manager

The chapter *Managing the Fileserver: !Manager* explains how to use !Manager to perform management tasks.

## Installing the print spooler

To run the print spooler you need a RISC OS machine connected to a printer. It is possible to use the same station to run both the Fileserver and the print spooler, but for the best performance, you should run the printer spooler from a station dedicated to that task. The spooler station will need a hard disc with sufficient space to store spooled files: a bit-mapped page can easily occupy 1 Mbyte or more. The disc should be local (attached to the station running !Spooler) as otherwise excessive network traffic will be generated. The station running the spooler must be on the same site as the Fileserver, but may be on a different network to comply with licensing requirements. If you have several networks, try to install a print spooler on each local network. If you don't do this, network traffic will result in reduced performance on

all the networks on the path between the client station and the station running !Spooler each time the spooler is used by a client.

You may run as many copies of !Spooler as you wish, but remember that a single licence will only allow you to run a single copy of !Server. There are no restrictions on the number of copies of !Manager you may run.

You should load !Spooler from the station on which you wish to use it; don't load it over the network as this would result in the print jobs being stored temporarily on the Fileserver and increase network traffic enormously. If you want to store !Spooler elsewhere on the network (perhaps on the Fileserver station), copy it into local disc space on the spooler station before loading it. You should copy it on to the hard disc. We don't recommend that you copy !Spooler into a RAM disc, though, as you are likely to run out of space in it very quickly and the data would be lost if the machine was switched off or reset.

To load the print spooler, double-click on its icon in the display for the directory it is stored in. The !Spooler icon appears on the icon bar. The spooler is then available to users on the network. The chapter *Managing the print spooler:* !Spooler explains how to set up and monitor the print spooler.

## Security

To prevent unauthorised people tampering with information stored on the Fileserver, keep the Fileserver station in a locked room. Even if you run the Fileserver on a station without a keyboard and monitor, it is sensible to take this precaution to prevent anyone attaching a keyboard and monitor and so gaining access to files.

Although you should keep the Fileserver locked away, do not keep it in a cupboard or unventilated room. If you keep a computer in such an environment, it may overheat and stop working. Remember that the reliability of all electronic equipment drops dramatically with increase in temperature.

Remember that the Fileserver station could be turned off accidentally or deliberately; plug it into a mains socket that is not readily accessible, and cannot be confused with the sockets for other devices, and label the socket or plug. The same applies to the plug and socket for an Econet clock box. If you use an isolating switch, make sure the Econet clock box and Fileserver are on the `live' side of the switch.

There is more about security in the section *Security* of information on page 59. The section *Hidden objects and access* rights on page 30 describes how you can use hidden objects to prevent users seeing directories, files or applications to which they are not allowed access.

# 5 Setting up the Fileserver

This chapter explains how to start up and log on to the Fileserver and how to create a boot file to start up the Fileserver automatically whenever the station is turned on.

## Starting up the Fileserver using !Server

At the start of the day, the Fileserver will usually be turned off. To get it ready for users, all you need to do is to turn on the computer you are using to run the Fileserver and start it up:

1 On the RISC OS desktop, open a directory display for the directory containing !Server.

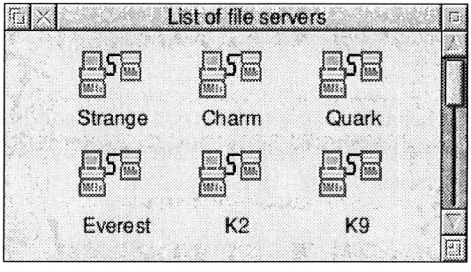
2 Double-click on the !Server icon. The icon appears on the icon bar with the caption Ready beneath it.

You can write a boot file to load the Fileserver at start-up, and then you will not need to do this each day. This is explained in the section *Setting the Fileserver* to start up at power on on page 47.

If you are running other applications, use the Task Manager to make sure there is sufficient space available in memory before starting the application. This is described in the RISC OS 3 User Guide. If you try to start an application when there is not sufficient memory free to run it, the machine may lock up. Do not attempt to run more than one copy of the Advanced Level 4 Server application at once, nor try to run both the Advanced Level 4 Server and the Level 4 Server at the same time.

## Logging on to the Fileserver

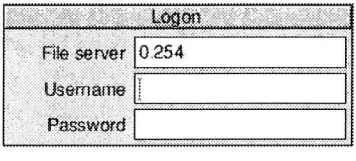
To check that the Fileserver is available, you will need to use another computer on the network; you can't log on to the Fileserver from the station running it. On RISC OS machines, use FS List in the network icon menu to display a list of fileservers available to RISC OS computers. The Fileserver you have just started should appear in the directory display, for example:




The name of each Fileserver is shown beneath or alongside its icon. There is an icon for each exported disc drive of each Fileserver; this usually includes the name of the hard disc the Fileserver is loaded on. There is more on exported disc drives in the section *Controlling the filing systems exported* on page 35. For information about BBC and Master series computers, consult the *Level 2/3 Fileserver User Guide*; this is supplied with the appropriate Econet interface.

You can log on to the Fileserver to check that it is working. Display the logon window in one of these ways:

- Click on the network icon on the icon bar.
- Click on the Fileserver icon in the FS List display.
- Choose **Logon** from the menu for the network icon on the icon bar.
- Choose **Logon** from the menu for the FS List display.




The name or station number of the Fileserver may already be shown in the first writable icon. If it is not, type its name or full number (that is, the number including the network number, such as 0.254 or 99.254) and press Return. Log on as GUEST by typing:

```
GUEST
```

in the Username writable icon. As the Fileserver is supplied, there is no password for the GUEST user identity, so just press Return here. If you have created a directory called GUEST, or have copied the example from the Extras directory on the Advanced Level 4 Server distribution disc, a directory display will appear showing the files available in the directory for GUEST. If there is no directory called

GUEST, a directory display will appear showing the root directory of the Fileserver disc.

When you have logged on to a Fileserver, the network icon on the icon bar changes its name to that of the Fileserver, for example:


Log off again (unless you want to continue using the Fileserver from that computer) by choosing Bye from the network/Fileserver icon menu.

## Setting the Fileserver to start up at power on

You can set up your Fileserver to start up the software each time the station is turned on or reset. This is especially useful if you are running the Fileserver on a station without a monitor and keyboard as it means that you don't need to attach these to start up the Fileserver each time.

The procedure varies depending on which version of RISC OS you are using.

### Starting the software under RISC OS 3.5 or later

Copy the !Server application into the directory (see *Figure 3* on page 29):

```
!Boot.Choices.Boot.Tasks
```

Then reset the machine. When the boot sequence has finished the Fileserver application should be running.

### Starting the software under RISC OS 3.1

Under RISC OS 3.1 you should start the software from a normal desktop boot file. The procedure for creating these is described in the Desktop boot files chapter of the RISC OS 3 User Guide. However, step 6 of the section entitled *Starting up your desktop `world' automatically* is incorrect. You must instead follow the instructions in the section *Configuring the computer to* boot on page 48 of this manual.

Also, you will find that your desktop boot file does not contain a line to start the software. Once you have created the desktop boot file, you will need to edit it, adding such a line at the end of the file. For example, to run !Server (the desktop version of the software) from the

root directory of ADFS disc 4 (i.e. your hard disc), you would add this line:

```
*Run adfs::4.$.!Server
```

If you need help on how to make this change, see the section Editing the desktop boot file in the same chapter of your RISC OS 3 User Guide.

## Configuring the computer to boot

To run the boot files automatically at start up, you need to configure the Fileserver station as follows:

**1** Press F12 to go to the command line.

**2** Type:

```
*Configure Boot
```

**3** Type:

```
*Configure FileSystem fs_name
```

where *fs_name* is the name of the filing system used by the disc from which you wish to boot. So for an ADFS hard disc (e.g. on an A5000 or A440) you would type:

```
*Configure FileSystem ADFS
```

whereas for a SCSI hard disc (e.g. on an A540) you would type:

```
*Configure FileSystem SCSI
```

**4** Type:

```
*Configure Drive n
```

where *n* is the drive number of the disc from which you wish to boot. For example, for the hard disc supplied with your computer you would type:

```
*Configure Drive 4
```

**5** Select the disc you've just configured by typing:

```
*fs_name
*Mount n
```

where *fs_name* and *n* are the same values you used earlier. For example to select ADFS drive 4 you would type:

```
*ADFS
*Mount 4
```

**6** Type:

```
*Opt 4,2
```

7 Press Return to return to the desktop.

Each time you reset or start up the computer, the applications and modules you have included in your boot file or application will be started up automatically. This means that you can remove the monitor and keyboard, and the Fileserver will start up whenever you turn the computer on.

## Getting the best from the Fileserver

There are several measures you can take to make sure you get the most from the Fileserver. These include some station configuration and set up options and some guidelines you should follow while running the Fileserver and performing management tasks.

### Optimum configuration

When setting up a station to run !Server, follow these guidelines for optimum performance:

- Choose a simple screen mode for the Fileserver station. Sophisticated screen modes like 27 and 15 use more processing power than lower resolution modes. A monochrome mode generally uses less processing power than a colour mode, and mode 0 is best. Modes 8 and 11 improve the visibility of the screen display, but use more processing power than mode 0. Use

  ```
  *Configure WimpMode 0
  ```

  or !Configure to re-set the default desktop screen mode, or use the **Mode** command in the palette icon bar menu to change the screen mode temporarily.

- Use a machine fitted with VRAM.

- If you are using RISC OS 3 (version 3.1x), configure ADFS buffers to 64 or more using

  ```
  *Configure ADFSBuffers 64
  ```

  (but note the warning on page 41). For CDFS, configure buffers to 128K with the command:

  ```
  *Configure CDROMBuffers 128K
  ```

- Configure ADFS directory cache to 64K or more using

  ```
  *Configure ADFSDirCache 64K
  ```

  If you are using SCSIFS, set a directory cache of 64K with the command

```
*Configure SCSIFSDirCache 64K
```

## Using the Fileserver

You will get the best possible performance from the Fileserver if you don't use the station running it for anything else. This means that is is better to use a different station to run the print spooler and when you want to use !Manager. If you do use the station running the Fileserver for other applications, any action that causes a Wimp error box to appear on the screen will stop !Server operating. There is also a limited number of Wimp error boxes that can be initiated by the Fileserver itself, such as `Disc full', that will require your intervention. You should also:

- Avoid leaving the status window for the Fileserver or spooler displayed on screen all the time. (Status windows are described in the section *The Fileserver* status window on page 99.)

## StrongArm processors

A StrongArm processor in the Fileserver station will give much better performance than an ARM2 or ARM3 processor, but this will not be very noticeable if you are using an Econet network as the bandwidth of the network is the limiting factor. Significant gains will be seen with Ethernet, though.

## Open files

Under some extreme failure conditions, files may be left open by the Fileserver. To close these, ask the affected user to log off and then log on again. If this fails to close all the files, make sure that no users are working on open files and then use the `*Close` command from the command line on the Fileserver station. This closes all files on the currently selected file system. The `*Shut` command closes files on all file system.

## Date stamps

As the Load/Execute data on saved BBC and Master 128 files occupies the datestamp area used by RISC OS, the datestamp for such files is not stored and may be returned as something like 01 JAN 1901.

This means that any application, in particular archiving and backup programs, cannot extract datestamp information for these files. As a result, these files may be backed up when not necessary, or perhaps not backed up, unless other action is taken.

Any unstamped file will automatically be time and date stamped.

## Pathnames and directories

Infinitely long directory pathnames cannot be supported. There is a limit of approximately 150 characters for a pathname. An error message such as `String too long` will be generated at the client station if a user tries to exceed the maximum pathname length. There is a note on this in the section *Pathname* length on page 30.

When examining directories on the fileserver from the desktop, the extended directories used to increase the allowed number of entries from 77 to 255 appear as directories with no name. Do not delete these. Be careful not to fill a directory under ADFS to 77 entries so that there is no space for the extended directory to be added by the fileserver.

## Preloading the font cache

With a large !Fonts directory, much time is taken in the station establishing all the fonts available to it, so keep these to a reasonable minimum, (say 3 or 4) and put all the remainder in !Fonts1 as supplied with Advanced Level 4 Server. Worthwhile improvements can be obtained at boot time by sensible use of the SaveFontCache and LoadFontCache commands. These commands, as their names suggest, save and load the font cache. To use them simply allow a machine which is logged on as Syst to see the required !Fonts. Press F12 and then issue the following commands at the * prompt:

```
*SaveFontCache Net:$.Arthurlib.FontCache
*Access Net:$.Arthurlib.FontCache WR/r
```

This will save the machine's font cache into the ArthurLib directory and set its access rights for use by any machine on the network.

To use the saved cache simply include the following command immediately before any commands to Filer_Boot the !Fonts application:

```
*LoadFontCache Net:$.Arthurlib.FontCache
```

thereby saving the machine the job of interrogating the font path when the machine is switched on.

## Loading applications and ClassShare

Application loading is probably the most testing activity of a network, especially if a whole class attempts to load an application at once. The Broadcast Loader is not effective with Ethernet, as it chops up packets

into small ones to enable more clients to participate in the broadcast activity. This dramatically reduces throughput on an Ethernet network and is the reason for the recommendation that you *Unplug the Broadcast Loader in the !ArmBoot file which is accessed by the Boot user.

- The Advanced Level 4 Server uses caching to provide good performance in this situation. If you require even better performance or a dedicated application/resource server then we would recommend the use of the ClassShare application server which has been developed for this purpose. ClassShare also provides facilities for dealing with scrap files. The ClassShare application server can be run on the same machine as the Advanced Level 4 fileserver. The application server does not provide the secure logon and other facilties that the fileserver provides.

## Preventing stations accessing each other

The Notify facility is available on early versions of the network software (before RISC OS 3). If you are using the Fileserver on a network in a school, you may want to disable the Notify facility that enables users on the network to pass messages to each other. We strongly recommend that at the same time you disable certain facilities that allow users to read or alter the memory of other stations. To permanently turn off both Notify and memory accessing facilities, use the BASIC call

```
SYS "Econet_SetProtection", &80000000 OR %100111111, 0
```

You need to use this from each station you want to protect. You don't need to disable the Fileserver station itself as the Advanced Level 4 Server does this automatically.

If a user tries to send a message to a protected station he or she will get the error message Station *nnn* not listening.

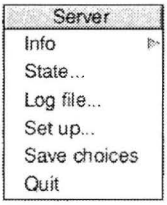
To turn Notify on again, but leave memory accessing facilities disabled, type

```
SYS "Econet_SetProtection", &80000000 OR %100101111, 0
```

NB. The Notify facility is not present in RISC OS 3 or later but this feature may be supported by a separate application.

## The !Server icon bar menu

To display the !Server menu, move the pointer over the Fileserver icon on the icon bar and press the menu button.



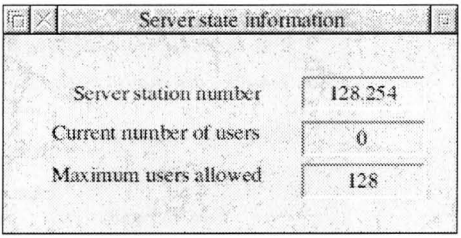

The commands in this menu allow you to do the following:

**Info**

Displays information about the version of the Advanced Level 4 Server you have installed.

**State...**

Displays this dialogue box containing information about the server :




- The number of the net the Fileserver host machine is attached to (128 in the example above) and its station number (254).
- Current number of users logged on to the Fileserver.
- The maximum number of users the Fileserver can support. This is the number of people that can be logged on to the Fileserver at any one time.

**Log file...**

Allows you to set the type of event that is recorded in the logfile kept by the Fileserver (described in the section *The logfile* on page 100).

**Set up...**

Reports details about the Fileserver's configuration and allows you to set various options (see below).

**Save choices**

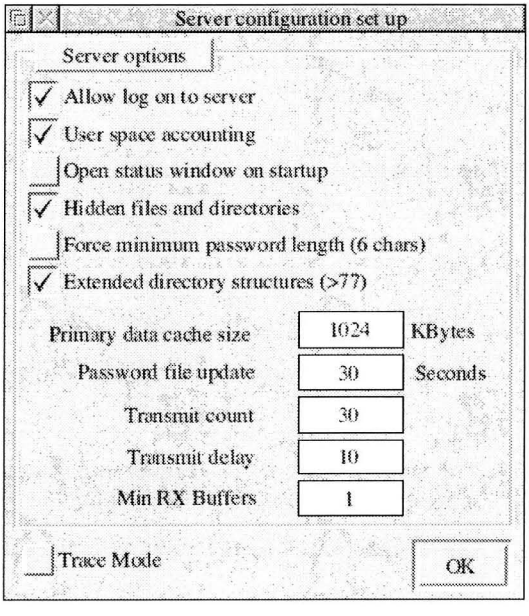
Saves and implements the settings you have made with the Log file and Set up tasks.

**Quit**

Closes down the Fileserver and removes the Fileserver icon from the icon bar.

## Setting !Server options

The menu option **Set up...** allows you to examine and set some Fileserver configuration options. It displays this dialogue box:




This dialogue box shows settings you can alter. The following are on/off (or yes/no) options:

- Whether users are allowed to log on to the Fileserver at the moment.
- Whether the space accounting facility is in use.
- Whether the Fileserver will automatically open a status window on start-up to report events as they occur.
- Whether files with no public read access will be treated as hidden objects and so not appear in directory displays opened by users.

- Whether users will be forced to use a password of six characters or more.
- Whether the Fileserver will use Extended Directory Structures to allow more than 77 entries in a directory.
- Whether or not Trace mode is activated.

The following allow various parameters to have values assigned:

- the size of the primary data cache.
- how frequently the password file will be updated.
- the number of times the Fileserver will re-transmit a response if it fails the first time.
- the delay between transmit retries in 1/100$^{ths}$ second
- the minimum number of receive buffers which are used to accept requests from clients.

These options are described in more detail below.

## Allow log on

You will usually want this option set so that users can log on to and use the Fileserver. However, if you want to prevent any more users logging on to the Fileserver for any reason, turn this option off to make the Fileserver temporarily inaccessible. Users who have already who try to log on logged on will be able to continue with their work, but any new users will receive the message `Fileserver not available`.

## Space accounting

When space accounting is on, users can save files in their directory until they have used all the space you have allocated to them. They will then need to delete files to make room for any new material they want to save, so that they are always working within the allocated space. If you turn space accounting off, the Fileserver does not keep track of how users are using space and they can save files freely even when they have exceeded the space you have allocated to them.

In some circumstances, the space accounting allowance for user files may contain inaccuracies. Under normal client desktop operation these should not present any problems. When a user writes to the Fileserver, the remaining space allocated to that user is decreased, even if the write operation takes place to an area outside the user's ownership, such as a mail box.

If you want to use space accounting, switch it on before the Fileserver is used by any client stations and leave it on. Don't copy files into a user's directory directly but only via the Advanced Level 4 Server. If you don't follow these guidelines, the space accounting can become inaccurate.

If the Fileserver disc becomes full, the Fileserver will stop working, issuing a `Disc full` error message.

### Open status window on startup

If you set this option, the status window will be displayed each time you start up the Fileserver. The status window differs from the logfile in that it is a temporary display, not a permanent record in a file, and it records events of all types, not just those chosen from the logfile dialogue box.

When the Fileserver starts up, the status window shows the version number of the Fileserver you are using and the date. As users log on and work, the window reports what they are doing.

### Hidden objects

If you set the `Hidden objects' option, files and directories with no public read access or public write access will not appear in directory displays opened by any user except their owner and system privileged users. If you do not set this option, the icons for the files with no public access will be visible, but users without system privilege (other than the file's owner) will not be able to open and use the files.

### Force minimum password length

If you enable this option, users must use passwords at least six characters long. !Manager will still require a password six characters long whether or not this is enabled. If the option is not enabled, users may change their passwords to shorter ones by using the `*Pass` command from the command line.

### Extended Directory Structures

The server can allow clients to see more than the normal ADFS limit of 77 entries in a directory by creating and putting the additional files in sub-directories. Turn this button off if you do not require this feature.

### Trace Mode

This is used to help find problems with the Fileserver or network.

### Primary Data Cache

This is the maximum amount of memory the Fileserver will claim for storing data such as applications or user's data files. Once the file has been put into the cache the next access to that file will be much faster. Typically a value of 1024K works well in most situations.

### Frequency of writing Password file to Disc

The password file is cached and any changes are only written to disc after a certain delay period. This improves the overall performance of the Fileserver and should be set at about 30 seconds. If a power failure occurs or the Fileserver is reset without being shutdown then any changes that have been made to the password file (such as a user changing their password) will be lost. Therefore it is a good idea not to set this delay at too long an interval.

### Transmit count

This is the number of times a failed transmission will be retransmitted before aborting. Usually this value should not be altered.

### Transmit delay

This is the delay between retries of a failed transmission. Usually this value should not be altered.

### Min RX buffers

This is the number of receive areas that are created by the Fileserver when it first initialises.

When you have finished making settings with this dialogue box, click on the **OK** icon. Use **Save choices** to keep the options you have set for the future.

## Quit

Use **Quit** to close down the Fileserver. This closes users' files. Any users who either try to log on to the Fileserver after you have used **Quit** or are still logged on will get the message `Station nnn not listening` when they try to communicate with the Fileserver

## Closing down the Fileserver

If you are going to shut the Fileserver down, it is a good idea to warn all users who are logged on, to give them time to tidy up their work on the Fileserver. However, if you have a large number of users this may be too time-consuming. Use **Quit** from the !Server menu (as described above) or **Shutdown** from the !Manager menu to close down the Fileserver. If you are running the Fileserver in non-desktop mode, or on a station without a keyboard and monitor, you will need to use **Shutdown** or `*FSShutdown` from a different station.

# 6 The Network Manager

The Network Manager is responsible for regular tasks that govern the running and day-to-day use of the Fileserver. This chapter tells you what tasks you will need to carry out regularly, and suggests some security measures to help you protect information stored on the Fileserver.

The Network Manager's responsibilities fall into these areas:

- Installing and setting up the Fileserver.
- Security of information.
- Adding and removing users and group users from the system.
- Allocating space to users and setting up user profiles.
- Managing facilities, such as programs, file storage space and printers.
- Controlling the print spooler.

## Installing and setting up the Fileserver

Installing the Fileserver involves copying the necessary files and directories from the Fileserver disc on to the hard discs of the stations you intend to use to run the Fileserver, !Manager and the print spooler. Setting up the Fileserver involves creating user identities and perhaps group users, and creating a password for the privileged identity SYST. You should rename SYST to a less obvious name. The procedure for creating users when you first begin to use the Fileserver is the same as the procedure for adding extra users when the Fileserver is established. It is very important that you rename and create a password for the user identity SYST to prevent other people using this powerful identity.

The description in this Guide assumes that you have already set up an Acorn network and have connected the stations you want to use to the network. If you have not done this, or need information on connecting additional stations, consult the *AUN Manager's Guide*.

## Security of information

Once users start to put their work on the Fileserver, security of information is likely to become an important issue. You will need to protect users' files against accidental loss and against abuse by unauthorised people.

There are five main ways that you can maximise security:

- Use passwords to validate users' log on.
- Restrict access to files.
- Keep the Fileserver in a locked room.
- Restrict users' privileges.
- Take regular back-up copies of the Fileserver disc(s).

You can also use the Fileserver in non-desktop mode (not running from the desktop) and without a monitor or keyboard. Remember that someone could attach a monitor and keyboard, though.

## Passwords and software access

Generally, if a user creates a file and saves it in his or her own directory on the Fileserver, he or she has the right to open, read, alter or delete the file. Other users logging on with different identities may be able to look at and read the file, but cannot usually alter or delete it. However, for this security system to work, each user must log on using his or her own user identity. A user who successfully logs on as someone else will have access to exactly the same facilities as the genuine user and so can alter and delete files in the other user's directory. To protect people's files from unwanted interference, it is essential that you make sure that users

- use passwords
- change their passwords frequently
- use non-obvious passwords
- don't tell others their passwords
- don't leave a written record of their passwords lying about.

Generally, users set their own passwords; make sure they do not choose very obvious passwords, such as the name of a member of their family, the date of their birthday, or their telephone number.

## Restricting access to files

As a system privileged user, you can specify the rights of access you want other users to have to a file, and protect it from deletion. Ordinary users can do this for their own files. Access to a file is divided into two areas: owner access and public access. By default, the person who creates a file (the owner) is able to read, alter or delete a file. Public access is usually restricted and other users may not even be able to read the file.

To set the access restrictions on a file, select its icon in the directory display and use **Access** in the menu. The RISC OS 3 User Guide explains how to use **Access**.

If you select several files or directories at once, you can set access rights for all selected items of the same type (file or directory). For example, if you select a mixture of files and directories, with a directory as the first item, the Access dialogue box will show the access rights for the first directory and will set access rights for all the selected directories. The access rights for files will not be altered.

## Hidden objects

It is also possible to `hide' files and directories from other users completely. A hidden file does not appear in the directory display, so users are not even aware of its existence. If you don't want users to be able to see a file at all, set it to have no public access and use the `hidden objects' option from !Server (described in the section *Hidden objects* on page 56). A file or directory without public read access or public write access will then be omitted from directory displays opened by all users other than the file's owner.

## Restricting access to the Fileserver

Another important security measure is to keep the Fileserver in a locked room. If anyone has access to the machine on which the Fileserver software is loaded, they will be able to look at, use and alter files and directories, regardless of their own privilege level as legitimate users. Even if you run the Fileserver station without a monitor and keyboard, someone could attach a keyboard and monitor and violate the security of the system.

## Restricting users' privileges

Each user has one of five privilege levels. When you create a new user identity, you can set the privilege level for the user, and you can change it later if you want to. The levels of privilege are the following:

- System users have the full privileges of a Network Manager. The user identity SYST supplied with the Advanced Level 4 Server has this privilege. A system user can create and delete user identities and control the use and operation of the Fileserver. This is the highest level of privilege.

- Group users are similar to normal users except when they are first created they are not allowed to log on. They also will normally own a directory that contains other users directories that they 'own'. Other users may also belong to these groups.
- Normal users have control over their own directory, can set their boot options and change their password, but cannot use the special network management facilities (such as creating users). When you create a new user identity, it will be given this privilege level by default. The user GUEST supplied on the Fileserver disc is a normal user.
- Locked users have much the same privilege as normal users, except that they can't change their boot options or password. The user BOOT should be a locked user.
- Fixed users cannot change their boot options or password, and cannot look at any directories above or to the side of their own root directory.

Many of the tasks which the Network Manager has to perform can only be carried out by the Network Manager, using a privileged user identity such as SYST. **This identity is very powerful; other users should not be allowed to use it, as it will allow them to perform all sorts of potentially dangerous tasks, such as altering the set-up of the Fileserver and deleting other users' files.** To ensure that unauthorised users don't use this identity, remember to log off whenever you are leaving your station unattended, don't tell others your password, and change your password frequently. You should change the Network Manager's user name from SYST to something less obvious; it is a good idea to change the user name as well as the password sometimes.

## Making back-up copies

The best insurance against losing data, whether due to users' mistakes, power cuts or unwanted interference, is to take daily back-up copies of the files stored on the Fileserver. If you do lose data, you can then restore (copy back) the last version of the files, which will be no more than a day old.

It is good practice to make back-up copies at the same time each day, ideally before shutting down the Fileserver, and keep them stored in a safe place. (This is described in the chapter Backing up the Fileserver.) You can back up on to another hard disc, a SCSI unit, a tape streamer, another Fileserver or, as a last resort, on to floppy discs.

## Adding and removing users

When a new user comes on to the network you will probably want to give them their own identity, directory and space on the Fileserver. The procedure for creating a new user identity and setting up a user profile is described in the section *Adding new user* identities on page 82.

When established users leave, you will probably want to remove their user identity and files. This is described in the section *Deleting user* identities on page 93.

You may need to add new stations to the network as you get more users. The Econet Design and Installation Guide explains how to attach a new station to the network, and set the station number.

## Managing space

There are two aspects to managing space on the Fileserver:

- Allocating space to users.
- Using Fileserver space effectively.

### Allocating space

Generally, you will want to allocate a user space to store files and directories (though it is possible to have users with no space of their own). You can allocate space to new user identities as you create them, and you can alter space allocations at any time.

The total space you allocate to users need not be restricted to the amount of space which is actually available on the disc, as it is very unlikely that all users will use up the whole of their space allocation.

The space allocations you make will be used to limit users' use of the Fileserver for storing files as long as you enable the space accounting option in !Server (described in the section *Space accounting* on page 55). When space accounting is turned off, users will be able to save as many files as they like, using space on the Fileserver without restriction.

### Using space efficiently

The second consideration is using space on the Fileserver efficiently. This involves avoiding duplication of files on the Fileserver (or of files available elsewhere on the network) and removing unwanted files.

You can check the space left on the Fileserver disc using the **Free** command in the disc drive menu from the Fileserver station. When the `Bytes free' figure for the hard disc falls below about 1MB, or 10% of the total disc size, it is time to clear out unwanted files and archive files that are not being used regularly. (If you are running the spooler from the same station as the Fileserver, you will also need extra empty space on the hard disc to store spooled files before they are printed.) It is better to manage space thoroughly all the time, though, than to wait until it is running low. To help keep the Fileserver free from outdated files you can do the following:

- Encourage users to delete files as soon as they have finished with them or move them on to their own floppies.
- Discourage users from having duplicate copies of commonly used files (such as form letters) or of files and applications already stored in generally accessible directories. Commonly used files and programs can be kept in a directory available to all users in the Fileserver root directory.
- Avoid keeping extra backup copies and unwanted files on the Fileserver.

You can delete or move files from the Fileserver hard disc using the normal RISC OS procedures.

Alternatively you can add a bigger hard disc.

## Managing facilities

One of the tasks of the Network Manager is to make sure that users have access to the files, programs, printers and space on the Fileserver that they need.

### Adding new program files

There will be times when you want to add more program or data files to those stored on the Fileserver. These may be programs you have bought for network use, or new data files to be used with existing programs. The way in which you add these files will depend on how the programs are supplied to you, and also on the way you want users to use them. Add new programs and data files to the Fileserver disc in exactly the same way as you would add them to any other hard disc, following the installation instructions supplied with the program, or copying data files using the usual desktop procedures. You will

probably want to copy the files into a directory to which all users have public read access. Before you copy any new programs for use on the network, check that the licensing agreement allows you to use the programs in this way. You may need to apply for a site licence before you can make a program available over the network.

When you have copied applications, you will have to change the access of the files inside the application directories to public read. If you don't do this, the application won't be able to find its !Run, !Boot or !Sprite files because they will be inaccessible, and the application won't load. Some applications also need write access to store settings and keep macros. In these case, problems can develop if many readers have write access to an application as one user may overwrite settings made by another, or several users may be using scrap files at the same time.

### File availability

When you become aware of files that users are finding helpful, such as form letters in !Style, or a BASIC program, you can make them widely available by storing them in a directory to which everyone has access.

In this way you can set common standards for your organisation while reducing the number of space-wasting duplicate files on the Fileserver hard disc. Move and copy files and directories using the usual desktop procedures, and make sure they have public read access. Remember that if you have any users with the privilege Fixed they won't be able to access files outside their own directory.

## Keeping records

To simplify extending your network system and dealing with problems, you should keep a written record of the station numbers of computers, Fileserver units, print spooler names and user identities.

## Maintenance tasks

While you can carry out most of your responsibilities with the Fileserver running, there are a small number of tasks that you may occasionally need to perform that must be done while the Fileserver is not running. These tasks are:

- Formatting discs (see the chapter Discs, networks and filing systems and the appendix Formatting a hard disc in the RISC OS 3 User Guide), or the manual supplied with your disc.
- Changing the Fileserver's station number (described in the section *Setting the station number* on page 40).
- Changing a disc's title (described in the section *Installing the Fileserver* on page 34).

Unless you use floppy discs for storing back-up data, you are unlikely to do any of these regularly.

Because the Fileserver will be out of operation while you perform these tasks, you should do so only when it is convenient to other users for you to close the Fileserver down.

## Changing CD-ROMs

If you wish to change a CD-ROM that is being exported, or any other exchangeable medium that is on the Fileserver, you must follow this procedure:

1 Use the option Dismount in the CD-ROM drive icon bar menu.

2 Remove the disc promptly, before users have a chance to access the old CD-ROM.

3 Insert the new CD-ROM.

Any users who try to access the CD-ROM you have removed will get error messages such as Not found. It is therefore best to use a *Users command and ask anyone logged on to the CD-ROM to log off before you change the CD-ROM.

## Controlling the print spooler

The print spooler allows several users to use the same printer, without having to wait until the printer is ready before sending their data files. The print spooler manages a `queue' of files waiting to be printed. As Network Manager, you will have to set up the print spooler and a suitable printer, and oversee the print queue. These tasks are described in the chapter *Managing the print spooler:* !Spooler.

# Part III:
# Using the Fileserver and Spooler

# 7 Managing the Fileserver: !Manager

You will need to use the !Manager application whenever you want to carry out any of the following management tasks with the Fileserver:

- Changing the name and password of the privileged user SYST.
- Creating new users and group users and their user root directories (URDs)
- Copying files and directories into URDs
- Finding user's URDs
- Altering user profiles (including allocating space to users).
- Finding out or re-setting a user's password
- Removing users and their URDs
- Closing down the Fileserver remotely

When you first install the Fileserver, use !Manager to change the system user (SYST) identity immediately.

## Using !Manager

To use !Manager, log on to the Fileserver using a system privileged identity such as SYST. It is best not to use !Manager from the Fileserver station itself while the Fileserver is running, as this will slow down the Fileserver for other users and any changes you make may be lost when you quit !Server.

It is best to make sure that at least 1024K are available in the Next slot before running !Manager. You can use the Task Manger to set the size of the Next slot; this is described in the RISC OS 3 User Guide. Although !Manager will run with only 1024K, the application may return a Heap full message while the application is running if you are manipulating very large user files.

You can load !Manager from the fileserver (if you put it in the system manager's directory) or from a local disc such as a floppy. To load !Manager, double-click on its icon in the directory display. If !Manager can 'see' a password file it will load it and display a filer viewer of users. The !Manager icon appears on the icon bar:

Clicking on the main icon will open a display of fileservers. If no fileservers have been seen an hourglass will be displayed for a short time before the window is displayed.

## The icon bar menu

The icon bar menu gives access to three commands:

### Info

Displays details about the version of !Manager you are using.

### List Servers

Displays a filer viewer containing fileservers on the network. This is similar to clicking on the main icon but will also update the cached fileserver list before displaying the fileservers.

### Quit

Closes !Manager and removes its icon from the icon bar.

## User identities

Each user of the Fileserver must be identified by a username. This is used by the Fileserver to match the user to his or her user profile and to find the appropriate directory to open. This directory is called the User Root Directory, or URD. There is more information on user profiles in the section *Setting user* profiles on page 89 later in this chapter. Details about the user identity, including the name of the URD, are held in the password file. This file is called Usersfile and is inside the !Server application directory.

### User root directories

Each time a user logs on to the Fileserver, the password file is examined to find the URD for that user and then the client machine opens that directory as the top level directory to which the user will have access. Often it will be a directory close to the exported root of the Fileserver, but it need not be.

If there is no matching URD in the first drive listed in the exports file, the Fileserver will examine all other drives listed until it finds a matching URD. If none is found, the exported mount point of the first

drive in the list is used as the access point. The client machine will then automatically select the drive that was logged on to, as long as a Fileserver was identified by name rather than number during log on.

In the first release of the Acorn Level 4 Fileserver you could specify full filing system references in the URD (such as ADFS::4.$.Fred), but this causes confusion if the mount point is not the root (the facility was removed for subsequent releases). Any user identities that have full pathnames specified will not work with the Advanced Level 4 Server and will be converted when the old password file is loaded by the new manager.

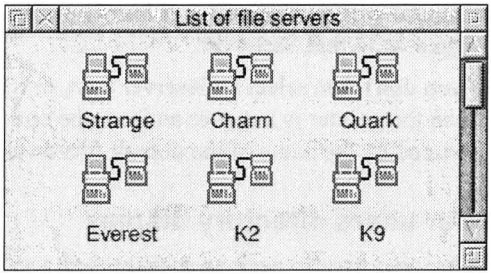
If the manager software is being run on the same machine as the Fileserver, the manager software looks at the export file inside the Fileserver directory to find out where the user's directories are on the disc. All user root directories are created relative to this mount point specified in the exports file. If the mount point is subsequently changed then the manager application would use the new path the next time the software is run.

### CD-ROM

If you have a CD-ROM that you wish to export, create a user with a suitable name, such as CD or CD_ROM. You don't need to have a URD for this user. Users can log on to the drive name selected and will be placed in the CD-ROM exported root directory.

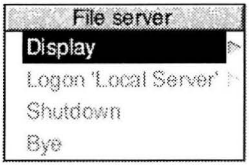
## Starting !Manager

To use !Manager, click on its icon on the icon bar to display a window showing the Fileservers available, for example:




One of the Fileservers may be named Local server. This is the Fileserver on the station you are using to run !Manager. Don't use this icon to access the Fileserver unless you are running !Manager on the Fileserver and !Server is not running.

You can perform management tasks for any of the Advanced Level 4 Servers which you are logged on to as a privileged user. (You can see which fileservers are Advanced Level 4 Server by using the **Full info** display option from the menu, described below.) You can also log on to a fileserver from this window, close down a fileserver, log off the fileserver you are using, and control the display of the icons in the window. If you press the menu button while the pointer is over a fileserver icon or a fileserver is selected, this menu is displayed:




### Display

Allows you to choose how the icons are displayed. You can choose **Large icons**, **Small icons** or **Full info**, as in other RISC OS displays. You can also sort the icons by name, number or type.

### Logon 'FSname'

Lets you log on to the fileserver the pointer is over. This displays the normal logon window.

### Shutdown

Allows you to close down the selected fileserver remotely.

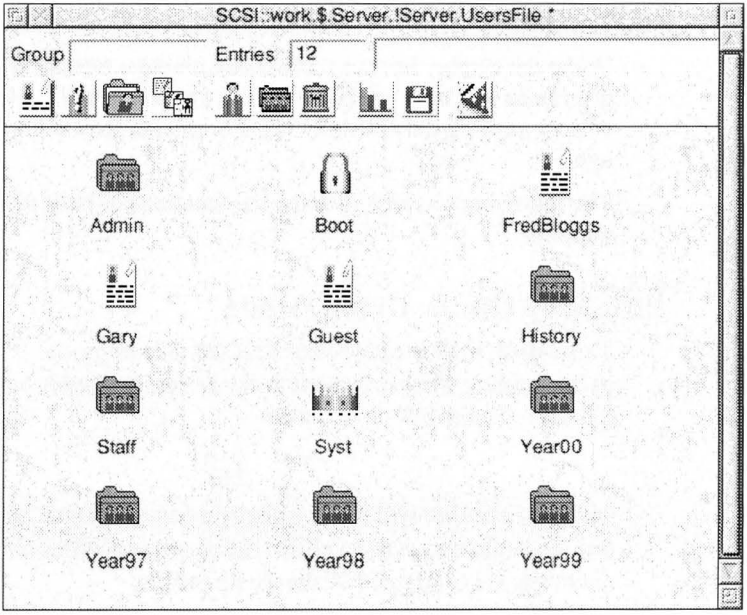
### Bye

Logs you off the fileserver. It is only available if you have already logged on to that fileserver.

If you don't first select a fileserver icon, or if you press the menu button when the pointer is not over an icon, the option **Logon `FSname'** is replaced by the name of the default fileserver.

## The Fileserver users directory display

When you want to perform management tasks on an Advanced Level 4 Fileserver, log on to that Fileserver as a system privileged user and then click on its icon in the Fileserver display. A window showing an icon for each of the users created for that Fileserver will appear:




This is similar to the RISC OS directory display filer but is designed for editing the users in the password file. When you first use the Fileserver, there may only be three users, GUEST, BOOT and SYST.

## The Display Bar

Under the title bar are three display panels:

- Group
- Entries
- Context sensitive help

The Group display panel will be blank until you enter a group by double-clicking on its icon, then it will display the name of the group that is displayed in the user display.

The Entries display panel shows the number of users and groups defined in the current display group.

Lastly the context sensitive help display panel will give concise help on the function of the item under the mouse pointer. As you move the pointer around the window, the help text in this display will change appropriately.

## The Toolbar

Under the display bar is a toolbar containing a number of buttons. They give quick and easy access to the most common tasks you will need when managing the network. This is quicker than using the menu options.

The following sections describe the functions of each of the toolbar buttons:

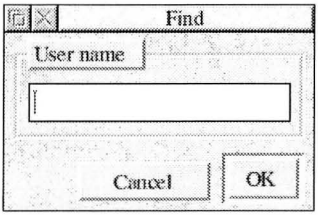
### Display User or Group Profile

This displays the profile of the selected user or group. First select one of the existing users or groups in the directory display below the toolbar. Then click on this icon:

The user's profile will then be displayed in a dialogue box similar to the one shown in the section entitled *Setting user* profiles on page 89 You may then review or modify the user's profile.

### Find User or Group

This allows you to find a particular user or group quickly. Clicking on this icon brings up the following dialogue box:




Enter the user's (or group's) name in the box and click on the OK button. If the user is found, the profile dialogue box is displayed showing the user's profile (see the section *Setting user* profiles on page 89) Otherwise an error dialogue box is displayed.

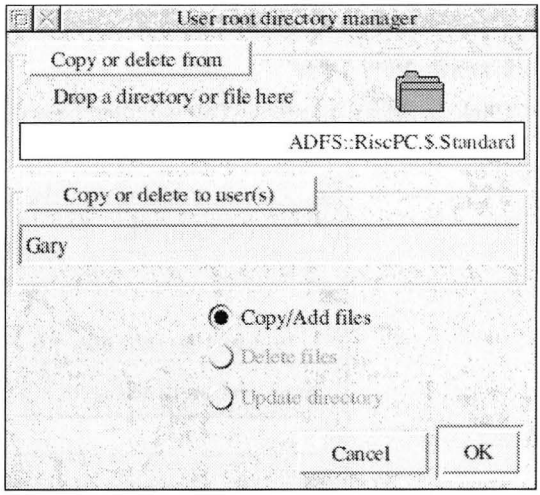
### Open User Root Directory (URD)

This displays the contents of the selected user's or group's User Root Directory (URD). First select one or more of the existing users or groups in the directory display below the toolbar than click on the

toolbar button. A window showing the contents of the URD will be opened if one exists.

## User Root Directory Manager

This button is used to allow files to be placed in, or deleted from, users' root directories. Select one or more users or groups in the directory display, then when you click on this button on the toolbar the following dialogue box is displayed:




You then have three options:

- Copy/Add files
- Delete files
- Update directory

### Copy/Add files

To add or copy files to the URDs of the selected users, select, drag and then drop file(s) or directories to the upper writable field. The file(s) will be copied in to the URDs of the selected users or groups.

### Delete Files

Drop a directory containing the files and directories you wish to delete from the user's URD. This will be used as a template to remove the files and directories from each user's URD. The directory you drag in

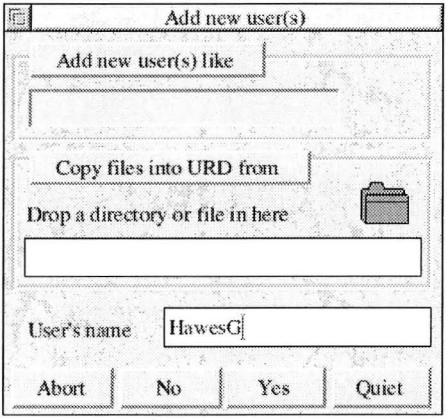
will not be deleted. Take care not to delete files the user wants to keep.

**Update Directory**

This makes the user's URD the same as the directory you drag in. It will add files that are meant to be there and delete are not. **WARNING:** this is useful for flushing out or initialising a the users URD so make sure there is a copy of any files that you wish to keep otherwise they will be deleted.

## Create New User

Click on the toolbar icon. You will then be presented with a dialogue box similar to:

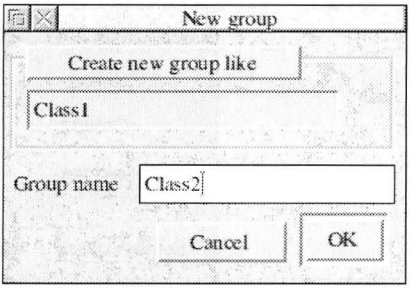



Enter the new user's identity in the lower box.

Once you have entered a new (unique) user identity, click on **Yes** and the new user will be created. See the section *Adding new user identities* on page 82.

## Create New Group

Click on the toolbar icon. You will then be presented with a dialogue box similar to:

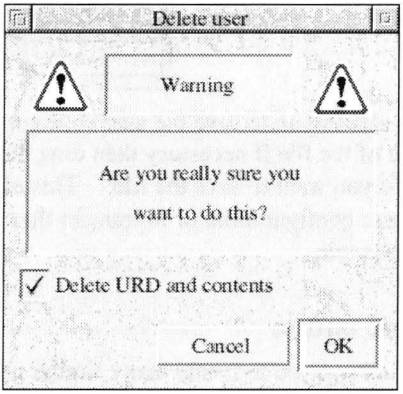



Enter the new group's identity in the lower box.

Once you have entered a new (unique) group identity, click on **OK** and the new group will be created. See the section *Adding New Groups* on page 84.

## Delete User or Group

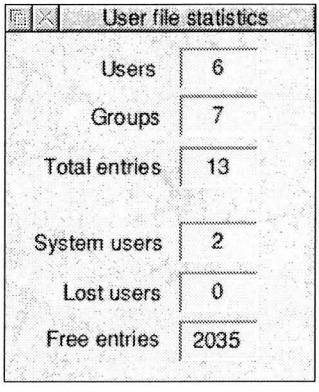
First select one or more users or groups to be deleted in the directory display below the toolbar. Then click on the toolbar icon. You will then be presented with the following dialogue box:




You may also delete the users' URD along with their files and directories by setting the **Delete URD and contents** box. Click on **OK** to delete the users, or **Cancel** to keep the users.

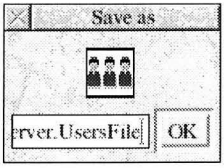
## Display User Statistics

This button displays statistics about the users. Click on the toolbar button and a dialogue box similar to the following is displayed:




## Save Users

When you click on this toolbar button, the following dialogue box will appear:




This allows you to save the user configuration file. Simply amend the name of the file if necessary then drag the icon to a directory viewer where you want to save the file. This allows you to create a backup of the user configuration, or to transfer the configuration to another server for example.

## Magic button

This allows you to create many similar users or groups with just a few simple steps. The system then magically creates all the users, inventing suitable names, creating the necessary URDs, copying skeleton and welcome files - this all with little effort on your part! See the section *Creating users using the 'Magic' button* on page 85.

## The Directory Viewer pane

This is the part of the window below the toolbar. This will display a number of icons as follows:

The user icons show each user's level of privilege:


Users with system privilege have a crown icon


This is the Group icon - a green icon with a number of people inside a directory.


Users with normal privilege have a paper with clip icon


Users with fixed privilege have an icon of a person inside a directory


Users with locked privilege have a padlock icon.

As well as using the toolbar, by pressing the menu mouse button whilst the pointer is over the window of user icons you can create a new user identity, create a new group identity, copy, rename or delete an existing user or group identity, or log off a user, and display a dialogue box to define or modify a user- or group- profile. These tasks are described in the rest of this chapter.

## The Fileserver users menu

Press the menu button with the pointer inside a filer window displaying users to display this menu:


The options are:

### Display

Lets you select how the icons are displayed. You can choose **Large** or **Small icons**, or **Full info**, and can sort the users by name, station number or privilege level.

### User `name'

Leads to a sub-menu allowing you to **Copy**, **Rename**, **Delete**, **Notify** or **Log off** the user. These options are explained fully later on in this chapter.

### Save

Leads to a **Save** dialogue box. You may save the whole file as a User file (in the format that !Server uses) or the file may be saved as a CSV file which can then be viewed and edited by an application such as !Edit.

### Select all

Selects all user icons in the window. If you select all the users, you can perform some of the tasks from the **User `name'** command on all users at once.

### Clear selection

Cancels a selection of one or more users.

### New user...

Leads to a writable icon for you to give a name for a new user identity. This is described further in the section *Adding new user* identities below.

### New group...

Leads to a writable icon for you to give a name for a new Group identity. This is described further in the section *Adding New Groups* below.

## Changing the SYST user identity

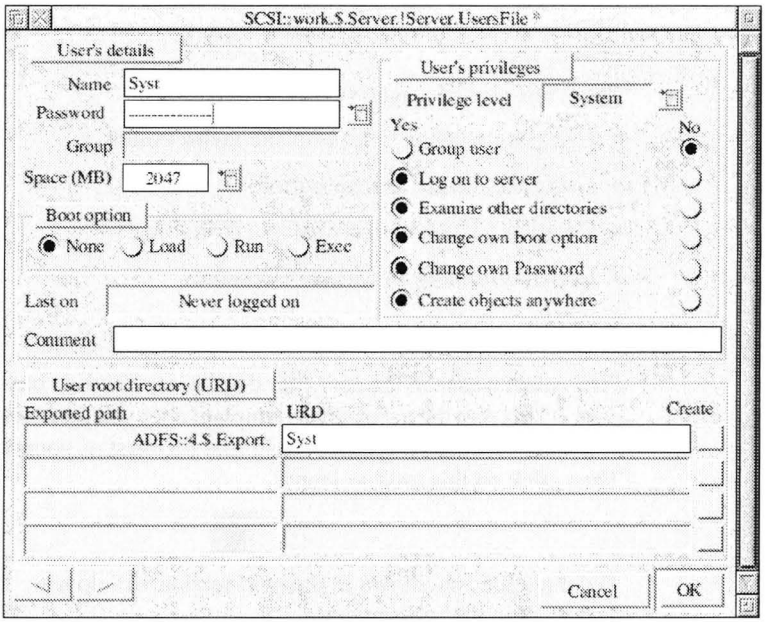
Before you do anything else with the Fileserver, create a password for the privileged identity SYST to prevent other users from using it.

Log on to the Fileserver as SYST. Press Return in the password writable icon, as there is no password for this identity initially. Open a directory display for the !Manager application, and double-click on its icon to load it. The icon appears on the icon bar.

Click on the !Manager icon on the icon bar to open a window showing the available fileservers. Then click on the icon for the Fileserver you want to use. The Fileserver window appears, showing an icon for each

user identity created for that Fileserver. If you have not yet created any users, the window will show just the users supplied on the Advanced Level 4 Server distribution disc. The icon representing the SYST user identity is a crown. SYST is the only system privileged user supplied with the Fileserver.

To change the password for the SYST identity, you need to use the user profile window. Double-click on the user icon in the display; the user profile window appears:




This window allows you to set various parameters to control how a user uses the Fileserver. It is described fully in the section *Setting user* profiles on page 89. To set a password for the identity SYST, click on the Password writable icon. Type the password you want to set. It must be at least six and up to 22 alphanumeric characters. Do not choose a password that other users might be able to guess, such as the name of a member of your family, your car registration number, telephone number or date of birth.

When you have finished, click on the **OK** button, and then on the close icon of the window. In future, you will need to type the new name and password in the appropriate writable icons of the logon dialogue box each time you log on to the Fileserver using the system privileged identity.

As an added security measure, you should also change the name you use to log on as a system-privileged user. You can do this by displaying the profile and changing the user name field or using the **Rename** option in the menu from the user display.

## Adding new user identities

You can allow users to start using the Fileserver immediately, using the identity GUEST supplied with the Fileserver. However, you will soon want to set up user identities and user profiles to suit the requirements of each user.

There are several ways of creating new users:

- Using the **toolbar** buttons or the **menu** button.
- Using the **Magic** toolbar button.
- Creating a batch of users using a **CSV** file.
- Copying users from another Fileserver.

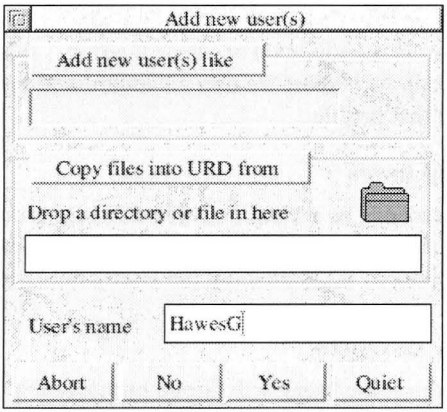
### Toolbar button

First select a user in the user filer display on which to base your new user. This may be a default or template user you have already set up with the profile settings you would like for most of your new users. Then click on this toolbar icon:

The dialogue box shown in the next section will appear. Proceed as described in the next section.

### New user

To create a new user, click on the **New user** toolbar button or the **New user...** menu option. You will then be presented with a dialogue box similar to:




Enter the new user's identity in the lower box.

Once you have entered a new (unique) user identity, click on **Yes** and the new user will be created.

This creates a new user identity with the name you give. An icon for the new user appears in the user directory display.

## Copy user

If you want a new user to inherit a similar profile to an existing user, you may want to copy the existing user rather than create new users with the default profile and change then them.

To copy an existing user, move the pointer over the user icon and press the select button. Move the pointer over the **New user** toolbar button to display the new user dialogue box then, type a new name and then click on the **Yes** button.

This creates a new user with a similar profile to the user you copied it from. The password, group, boot option, space allocation, privilege, last log on and comment are copied but the User Root Directory is based on the user copied from but with the new user's name instead.

An icon for the new user appears in the user filer window. You can make adjustments to the profile of the new user (see the section *Setting user* profiles on page 89).

## Template Users

If you often need to create users with similar profiles to other users on the Fileserver it is a good idea to create a template for that type of user. Create a normal user and call it !Standard. Then edit the user profile to

set up the values you require for space allocation and so on. Put this user in the top level or inside a group. When creating new users in that group first select the user !Standard and then create the new user based on that profile.

### Moving users

Users can be moved between different groups by opening displays for each group and dragging the user icon between them. The group they belong to is updated but the User Root Directory is not altered.

## Adding New Groups

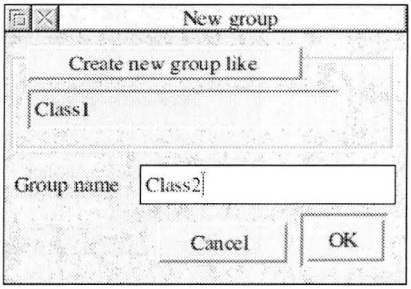
Groups are users with Group privilege that can 'own' other users and their directories. They are created to allow other users to be created that belong to groups to make the task of handling large numbers of users much easier. This also allows the directory structure on the fileserver to match the structure of the groups and users within those groups. A user may only belong to one group at a time but a group may belong to another group (see *Figure 1 - An example group* directory structure on page 23). It is possible to have several levels of groups within groups to enable a structure to be built that models the way the school is organised. By default they are created without the ability to log on but if this is changed then a password should also be set.

You can create groups in one of the following ways:

- Using the **toolbar** button.
- Using the **New group...** menu command.
- Using the **Magic** toolbar button

### Toolbar button

Click on the **New group** button or the **New group...** menu option, a dialogue box similar to the following will be displayed:



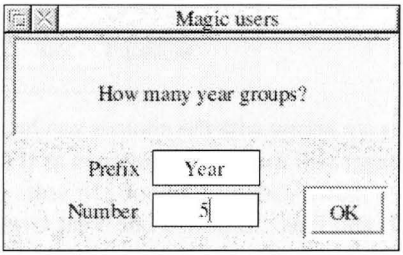

Type in a unique group name ie: Class2 and click on the OK button. This creates a new group called Class2. The name must not be more than 10 characters long (the limit for names when using file systems such as ADFS or SCSI). This will also create a directory for this group and set other user profile parameters as usual. This user will then own all other users that are created within the group.

## Creating users using the 'Magic' button

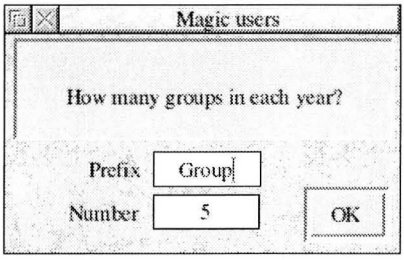
Creating individual users and groups can be a tedious and time consuming process. Have no fear there is help at hand! By using the 'Magic' toolbar button:

you can 'automate' this process. First select a user to copy the profile from then click on the **Magic** button on the toolbar.

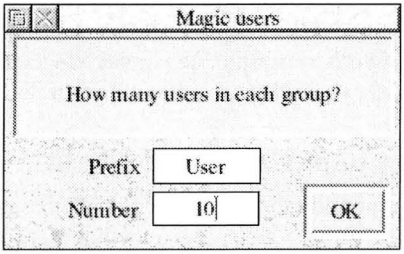
When you click on this button you will be presented with the following dialogue box:



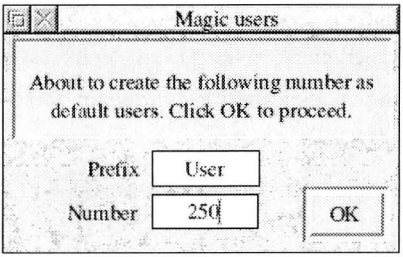

Enter the number of 'year' groups in the box and click on **OK.** This will then display the next dialogue box:



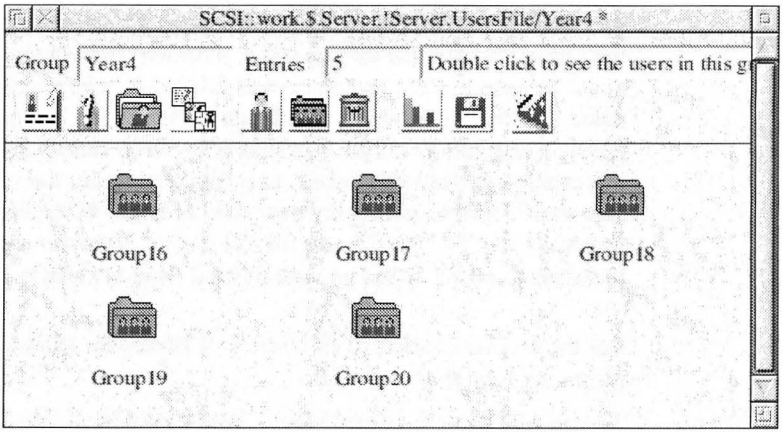

Enter the number of groups in each year (if some year groups have less than others enter the largest number) and click on **OK**. This will then display the next dialogue box in the sequence:




Enter the number of users in each group and click on **OK**. This will then display the next dialogue box as follows:

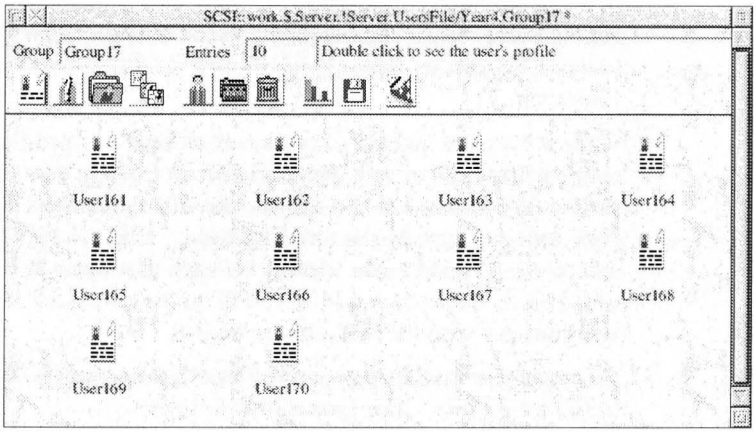



If you are happy with the choices you have made, click on **OK**. !Manager will then create the users as if by magic. In the example values shown above, a total of 250 users will be created along with their URDs and files. Below is one Year Group's (Year4) directory display created as a result of the above example steps:




This shows the five groups in that year, numbered Class16 to Class20. The other year groups will have similar names - eg Class1 to Class5 in Year Group 1, Class21 to Class25 in Year Group 5. Of course if you specified more than 5 groups per year, then the numbering sequence will be amended to compensate.

Below is the directory display of the Class17 group.




As you see it shows the 10 users in this class. In this case the User Identities are User161 to User170. Of course if you specified a different number of users in each group, the numbering will be adjusted accordingly.

With this anonymous scheme, it is possible to re-use user identities over and over as new students join the school and existing students leave.

The student would keep the same identity and user root directory for the time he or she is at the school. The **comment** field in the user profile could be used to store the user's real full name and the actual class name they belong to which could then be search for in an exported **CSV** file by a text editor. If the user moves between classes then only the information in the profile needs to be updated rather than creating a new user identity and moving their files around. When the user has finished using the identity any files 'left over' from the previous incumbent can be 'tidied up' and deleted from the URDs.

See the section entitled  ***User Root Directory Manager*** for further information on how to do this.

As you will see, use of the 'Magic' button should greatly reduce the workload for preparing the server for each intake of new students.

## Creating a batch of user identities using CSV files

Sometimes you may want to create a large number of users at once. This may be when you are setting up a new Fileserver, or when you are allocating user identities to a new class of pupils, for example. Instead of using the **'Magic'** button, or the **New user** buttons repeatedly and setting user profiles individually, you can create a batch of users from a text or CSV file, or copy a batch of user identities from another Fileserver.

To create a large number of users with default user profiles, you need to create a batch file of user names. Select an existing user to base the profile on and drag the text file into the Fileserver users display, the **New user** dialogue box is then displayed. Click on the Quiet button and this will create a user identity for each user name in the file. If a user already exists then this users will not be re-created and the process will continue with the next user in the list.

To create user's with specific profiles or group users you will need to create a **CSV** file. The format is as follows;

```
<Username>,<Password>,<URD>,<Boot Option>,
   <Space>,<User flags>,<Group>,<Last log on>,
   <Comment>
```

An example CSV file may look like;

```
"Group1","","Group1",0,0,143,"","",""
"Fred","Secret","Group1.Fred",0,1000,15,"Group1","",""
"Jim","","Group1.FredBloggs",1,2000,15,"Group1","",""
"Penny","one","Group2.Penny",0,10000,15,"Group2","",""
```

Make sure the filetype is set to **CSV** and drag the file to the display of users on the fileserver you want to create these new users. The **New user** dialogue box is then displayed. Click on the **Quiet** button to create these users. When the users have been created the option to save a **Report file** is given. Drag this file to your disc or text editor to review the success of the process.

If you want to individually select which users from the file you want to add you can use the **Yes** and **No** button in the **New user** dialogue box.

You can't drag a file that does not contain the correct information you may get error messages such as `name is a bad name, Type mismatch or String too long` will appear.

## Copying a batch of user identities using CSV files

You can generate a list of user names as a **CSV** file by selecting some or all the users in a Fileserver users directory display and then using the **CSV file** option from the **Save** sub-menu. It is then possible to edit the user profiles using a text editor or import the information into a database application.

To create a file of user definitions, select the users you want to copy, and then use the **Selection** option from the **Save** sub-menu. If you want to copy all the users, use the **CSV File** option from the sub-menu instead. These commands create a **CSV** file of user definitions. Call the file Users. This file can then be used to add users to another fileserver (as long as they do not exist already) or make changes to existing users and save the results back to the fileserver.

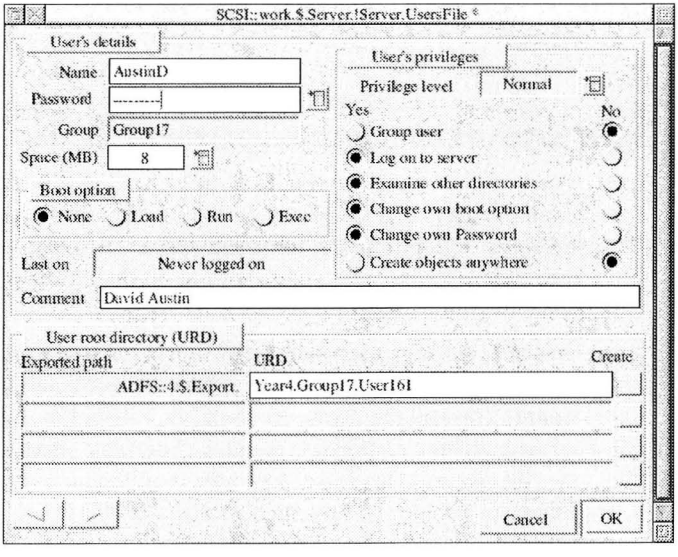
In addition, if you are logged on to and managing more than one Fileserver, then you can select a group of users in one and drag them directly into the other. This also creates new users with the same user profile as the originals.

## Setting user profiles

A user profile is a group of settings that define how a user may use the Fileserver. It includes:

- user name
- password (hidden until revealed by the menu button)
- the group this user belongs to
- boot option
- privilege level

- whether this user is a group
- user root directory name
- how much space is allocated to the identity
- whether a user directory may be created
- whether the user identity can be used for log on
- the last time this user logged on (this is added by the fileserver)
- comment (such as the user's real full name eg. Rachel Louise Stephenson)




You can set a user profile at any time; you are most likely to do so when creating a new user identity, but you can also change or just look at the profiles of existing users.

## Updating several user profiles

If you need to update several user profiles with the same changes for example, to allocate space or change their boot option, select the users you want to change and click on the **Profile** toolbar button. This will open a blank user profile display. Make the changes you require and click on the **OK** button. The changes will then be applied to the selected users.

If you need to update several user profiles with different changes, you can use the left and right arrow buttons in the user profile window to call up one user identity after another. When you have finished making settings for one user, click on **OK**, and then on one of the arrows to

display details of the next or previous user. The sequence in which user profiles will be displayed is taken from the order of user icons in the directory display. This is determined by the **Display** option you have chosen (order by **Name**, **Privilege** or **Station Number**).

For more complex changes it is possible to export the users as a **CSV file** and then carry out the changes using a text editor such as **!Edit**. Then drag the **CSV file** back to the user filer window.

## Password

A user's password is not displayed in the profile window. If you need to find out what a users password is the click on the Password menu button next to password. This will reveal the password and provide some alternatives should you wish to change or delete it. This may be useful if a user has forgotten his or her password. Obviously, if you delete a user's password and don't tell him (or her), he won't be able to log on as he will continue to use the password and it won't be accepted. (However, to prevent log on, click to remove the star from the **Log on to server** option icon.)

## Setting boot options

You can set a user's boot option to one of four settings:

- None.
- Load.
- Run (if the user is likely to use a RISC OS client).
- Execute (if the user is likely to use a Master 128 or BBC B station).

This setting controls the action when the user logs on. The default is None, so even if the user has created a boot file, it won't be used. A boot file will be ignored, loaded, run or executed according to which of the settings you choose. If you set the boot option to load, run or execute and the user doesn't have a boot file, the error message not found will appear when he or she logs on.

If a user could use any type of station (RISC OS, Master 128 or BBC B computer), use Run and put the example !Boot files from the Extras directory on the Advanced Level 4 Server distribution disc in Library and Library1 which are used by Master 128 and BBC B computers. If you give a user !ArmBoot rather than !Boot and set the station to run the boot file, and he or she logs on from a Master 128 or BBC B station, the error message not found will appear. The same will happen if a user with !Boot logs on from a RISC OS station.

## Privilege level

There are five privilege levels:

- System: system privileged users have access to all files and directories exported by the Fileserver, can control the Fileserver set up, use !Manager to create and delete user identities and alter user profiles, close down the Fileserver and print spooler.
- Group: similar to a normal user except not allowed to log on by default. This user is used to enable the manager to create users that belong to a group to simplify management of the users file. This user would normally 'own' a number of sub-directories that belong to Normal users.
- Normal: normal users own and can use their own directory (if they have one), set their boot option and change their password.
- Locked: locked users own and can use their own directory (if they have one), but can't change their boot option or password.
- Fixed: fixed users cannot look at or use files in any directory other than their own, and can't change their boot option or password.

A default user identity created with the **New user** command has Normal privilege. If you want to create users with a different profile then create a user called !Default or !Template and set up this user as required. Then before creating a new user select this user to copy from.

## Log on to server

If you ever need to prevent users logging on, you can click in the option icon marked **Log on to server** in the **No** column and they will not be allowed to use their identity to log on to this Fileserver (though this will not affect their right to use any other fileserver on the network). When you want a user to be able to use the identity again, click on the button in the **Yes** column. After changing this setting, click on the **OK** icon to save the change you have made.

## User Root Directory (URD)

If you have created new users without a root directory, you can later create these directories by clicking to activate the appropriate options icons of the user profile window and then click on the **OK** icon. If you do create these, you can't delete them later just by altering these settings, but will need to delete the directory icons following normal

RISC OS procedures. Reviewing a user's profile will not always show whether a user root directory exists.

If the Fileserver is exporting more than one disc the export paths are displayed along with the URD path in the URD panel. The URD path is the same for all exported discs so that a user may 'own' more than one directory. The directories on other discs must have the structure as the first disc but may the export mount point may be different.

The export mount point is read from the !Server applications Export file and cannot be changed by the !Manager application.

If the Fileserver has more than one exported drive and you are using !Manager from a remote station, you must be logged on to the disc on which you want to create the user root directory. Do not use this facility locally if the export is not from $.

### Allocating space

By default, a new user is allocated 1MByte of space. You can change this value to between 0MBytes and 2048MB. Users' space will be used up as they create and save files, and freed as they delete files.

The space allocation will be used only if you set Space accounting on from the !Server icon bar menu. This is described in the section *Space accounting* on page 55.

## Deleting user identities

You can delete one or more user identities by selecting them and then using **Delete** button from the toolbar or the **Delete** option on the **User `name'** menu. The user's root directory and contents will be deleted if you select the option from the dialogue box. If this user is a group user then all the users and their directories that belong to the group will be deleted.

## Size of the 'Usersfile'

When a user identity is deleted from the 'Usersfile', the entry is marked in the file as invalid but remains in the table. If a new user is added, the first spare location is used. However, if you create a large users file and then delete many of the user identities, the file will remain large. If you want to reduce the size of the users file you can use the following procedure. Select the option **All** from the menu and save the selection as a **User file** which you can call 'Usersfile'. The invalid entries will not be saved to the new file.

# 8 Backing up the Fileserver

You should make regular back-up copies of the files on the Fileserver to guard against loss of information in the event of power failure, or accidental or deliberate misuse of the files.

## Making back-up copies of Fileserver files

You can back-up on to

- another hard disc
- a network filing system
- a tape streamer
- a zip drive
- a SCSI unit connected via SCSIFS for example an Optical disc
- floppy discs.

You will probably not need to back up all the files on the Fileserver. For example, some may be applications or standard programs, documents and style sheets that are never changed. You will only need a single back-up copy of these.

However, you will need to back up users' files regularly. It is a good idea to have multiple back-up copies of users' files. The scheme we suggest uses a total of eight back-up copies, and is as follows:

- One back-up copy is reserved for use on Mondays, and so the data on it gets overwritten each week.
- Three more back-up copies are reserved for similar use on Tuesday, Wednesday and Thursday respectively.
- A total of four back-up copies are reserved for use on Fridays. Each Friday you should back-up over the oldest copy.

For a given file you should therefore have copies of it from each of the previous five working days, and copies of it for each of the three weeks preceding that. This means there's a very high chance you can restore a corrupted or deleted file, even if a user doesn't find the problem until a few weeks after it occurred. This is, of course, particularly likely to happen if your users only occasionally log on - say once a week.

## Backing up on to another hard disc

If you have another hard disc unit available on the Fileserver station or on the network, you can make your back-up from the Fileserver on to this. Log on as a system privileged user and open a directory display for the second hard disc and one for the Fileserver root directory. To display the Fileserver root directory, use **Open $** in the Network/Fileserver icon bar menu. You will need to make sure the copy options are set to overwrite existing files and directories with the same name. Suitable copy options are set by typing

```
*Set Copy$Options A N R
```

This makes these settings:

- A: retain the access rights set for the file or directory.
- N: only copy the file or directory if it is newer than the one with the same name on the destination disc.
- R: copy all sub-directories and their contents.

There is more information on setting copy options in the *RISC OS 3 User Guide* in the chapter *Star command summaries*.

It is also possible to set up !Alarm to execute *obey files* which will carry out this task. See the section called **ALARM** in the *RISC OS 3 User Guide* for more information on how to do this.

Copy all or some of the directories and files from the Fileserver root directory to the second hard disc using the usual RISC OS procedure.

## Backing up on to a tape streamer

If you have a tape streamer, you can make back-up copies on to this. Consult the documentation accompanying the tape streamer for instructions.

## SCSI

Back up on to a SCSI device connected via SCSI in the same way as you would back up on to any other hard disc: open a directory display for the unit and drag files into it from the Fileserver root directory.

## Backing-up on to floppy discs

We do not recommend this method but you should back up the Fileserver on to floppy discs if there is no other medium available to you. Before you begin to back up files from the hard disc for the first time, you will need a stock of formatted floppy discs (about 80 for a full

50Mb hard disc). The chapter *Discs, networks and filing systems* in the *RISC OS 3 User Guide* explains how to format floppy discs.

Give the floppy discs consecutively numbered titles, and keep a note of which files and directories each disc contains. Write the date of the back-up on each disc, changing it whenever you re-use the third day's back-up copies.

Suitable copy options are set by typing

```
*Set Copy$Options A N R
```

This makes these settings:

- A: retain the access rights set for the file or directory.
- N: only copy the file or directory if it is newer than the one with the same name on the destination disc.
- R: copy all sub-directories and their contents.

There is more information on setting copy options in the *RISC OS 3 User Guide* in the chapter *Star command summaries*.

A large user directory may need to be split over more than one disc. You can save disc space by using an archiving program such as !Spark. This allows you to `shrink' large files into a compact form for storage. Alternatively, you can use the Archive and Getback utilities for Model B and Master series computers. *The FileStore Network Manager's Guide* explains how to use these.

## Restoring files

If you need to restore any files from the back-up copies, you can do this by copying them back into the Fileserver directory in the same way as you would load or copy a new file on to the Fileserver. If any files have been altered since the back-up was made, you will need to turn off the copy option N (only copy newer version of files) and F (to force overwrite of existing files) to restore the earlier versions of the files. Type

```
*Set Copy$Options A ~N R
```

to set suitable options.

## Encouraging users to archive their work

As well as making regular back-up copies of the files on the Fileserver yourself, you should encourage users to make their own copies of their files on to floppy discs or the hard disc on their own machine. If they

are using RISC OS stations, they can restore any of their archived files by copying the icons back into their user directories on the Fileserver.

# 9 Monitoring use of the Fileserver: !Server

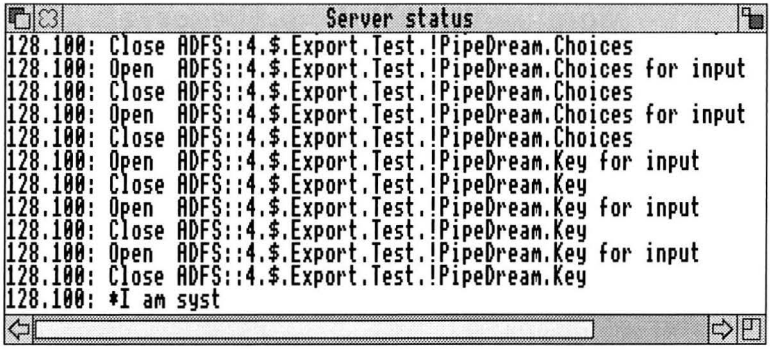
You will probably want to monitor use of the Fileserver in some way so that you can see how and when users are using it and which files are being used most frequently. This will help your planning and computer usage accounting and enable you to make the best possible use of the Fileserver and other computer resources. To use the facilities described in this chapter, you need to use the Fileserver station and have the Fileserver loaded.

## The Fileserver status window

When you click on the Fileserver icon on the icon bar, a status window appears showing the current status of the Fileserver. The status window reports the state of the Fileserver and each event performed by users as they happen. It is constantly updated as users work with the Fileserver. It reports:

- the current version number on start up
- *Commands used by users (translated from the desktop activity from RISC OS stations)
- error messages sent to client stations
- users loading files
- users saving files
- users opening files, applications or directories
- users closing files, applications or directories
- users examining directories.

The status window shows the actions the Fileserver is taking on behalf of its clients. The details it shows may not match the *Commands used exactly as other translations may take place.

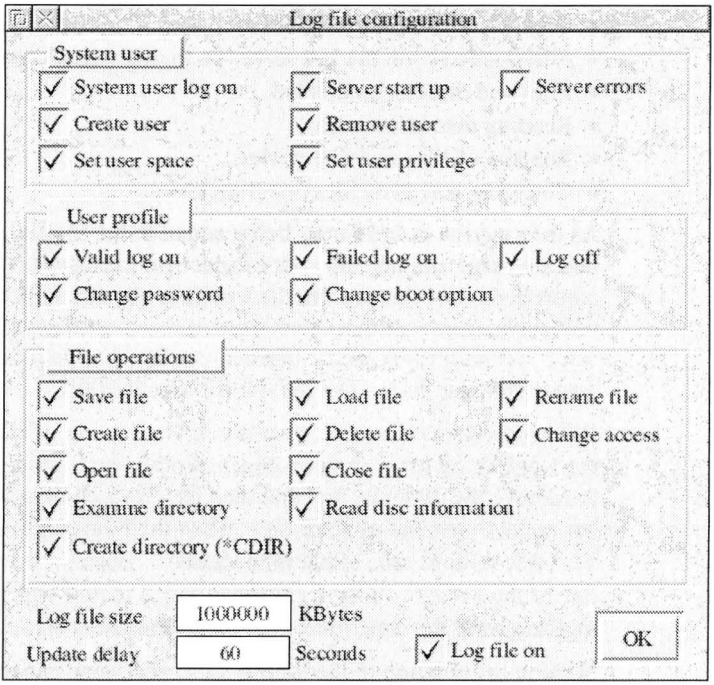



You can use the status window whenever you want to see how the Fileserver is being used. It isn't a good idea to leave the status window displayed all the time while the Fileserver is in use, though, as it will slow down other Fileserver operations.

If you just want to know how many users are currently logged on to the Fileserver, you can do this using the icon bar menu command **Set up**, described in the section *The !Server icon bar menu* on page 53.

## The logfile

The Fileserver keeps a logfile in which it records events as users access and make use of the Fileserver. You can choose which type of events are recorded in the logfile using the window displayed by the menu command **Log file**. The logfile is an ASCII text file stored in the !Server directory. To display the window for choosing events to log, select **Log file** from the Fileserver icon bar menu:




You can choose to record each event of these types:

- Logon by a user using system privilege.
- Creation of a new user.
- Deletion of a user.
- Setting user space.
- Starting of the Fileserver.
- Setting of user privilege.
- Errors generated by the Fileserver.
- Users logging on to the Fileserver.
- Users changing their password.
- Failed attempts by users to log on to the Fileserver.
- Users changing their boot option.
- Log off by users.
- Files saved on to the Fileserver.
- Files created on the Fileserver.
- Files opened by users.
- Files closed by users.
- Directories and files examined by users.

- Creation of a new directories.
- Files loaded from the Fileserver on to client machines.
- Files and directories deleted.
- Reading disc information.
- Rename of files and directories.
- Changing access of files and directories.

As information is constantly being added to the logfile, it could soon become large and take up a lot of space on the disc if it were not controlled. For this reason, the logfile is allocated a fixed space, and will cycle, overwriting its start when it reaches the maximum allowed size. To set the size of the logfile, use the writable icon on the logfile set-up dialogue box. The default file size is 500K.

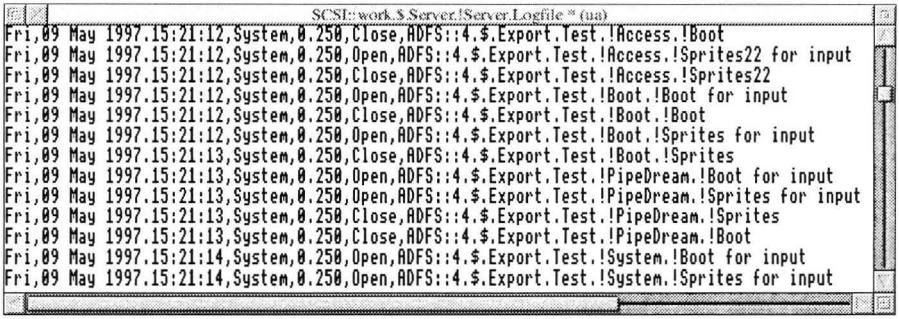
When you have chosen the events you want to log in the file, click in the **LogFile** on/off icon to enable or disable the logfile. Click on **OK** to remove the dialogue box and then use **Save choices** from the icon bar menu to use the same settings when the Fileserver is used in future. The new settings take effect immediately. Each time a user performs one of the events you have chosen to log, a record will be added to the logfile giving the date, time, user name and client station number.

Writing information to the logfile uses processing capability. The Fileserver will run more slowly if it has to make many entries in the logfile, so you should try to keep use of the logfile to a minimum to optimise performance of the Fileserver.

You can find the marker after the most recent event by searching for the null character [00]. If you reduce the size of the logfile, ignore the data after the new marker position as they represent old log information. Don't delete the log file.

## Looking at the logfile

When you want to look at the logfile, hold down the Shift key and double-click on the !Server icon in the directory display to open a display for the files inside the application directory. One of the files will be a text file called `logfile'. You can look at this in !Edit. Here is an example:


SCSI::work.$.Server.!Server.Logfile * (ua)
Fri,09 May 1997.15:21:12,System,0.250,Close,ADFS::4.$.Export.Test.!Access.!Boot
Fri,09 May 1997.15:21:12,System,0.250,Open,ADFS::4.$.Export.Test.!Access.!Sprites22 for input
Fri,09 May 1997.15:21:12,System,0.250,Close,ADFS::4.$.Export.Test.!Access.!Sprites22
Fri,09 May 1997.15:21:12,System,0.250,Open,ADFS::4.$.Export.Test.!Boot.!Boot for input
Fri,09 May 1997.15:21:12,System,0.250,Close,ADFS::4.$.Export.Test.!Boot.!Boot
Fri,09 May 1997.15:21:12,System,0.250,Open,ADFS::4.$.Export.Test.!Boot.!Sprites for input
Fri,09 May 1997.15:21:13,System,0.250,Close,ADFS::4.$.Export.Test.!Boot.!Sprites
Fri,09 May 1997.15:21:13,System,0.250,Open,ADFS::4.$.Export.Test.!PipeDream.!Boot for input
Fri,09 May 1997.15:21:13,System,0.250,Open,ADFS::4.$.Export.Test.!PipeDream.!Sprites for input
Fri,09 May 1997.15:21:13,System,0.250,Close,ADFS::4.$.Export.Test.!PipeDream.!Sprites
Fri,09 May 1997.15:21:13,System,0.250,Close,ADFS::4.$.Export.Test.!PipeDream.!Boot
Fri,09 May 1997.15:21:14,System,0.250,Open,ADFS::4.$.Export.Test.!System.!Boot for input
Fri,09 May 1997.15:21:14,System,0.250,Open,ADFS::4.$.Export.Test.!System.!Sprites for input

# 10 Managing the print spooler: !Spooler

The print spooler enables users on the network to send files to a printer attached to the Fileserver station or to any other machine running !Spooler. Files sent to the printer are added to a queue and are processed in turn as the printer becomes available. It is possible to connect more than one physical printer to the machine running !Spooler (a serial and a parallel printer, for example), and it is possible to define more than one logical printer (set of characteristics) for the same printer device. Each would then appear to users as a separate printer with its own identity. You may want to use this facility to set a printer to have, for example, a high resolution on one printer identity and a low resolution for draft material on another.

To use the print spooler, you need to load !Spooler on the host machine and connect an appropriate printer. The !Spooler application then allows you to manage the spool queue and set certain printer characteristics. Users need to load a suitable printer driver from their own stations. You might want to keep printer drivers in an applications directory on the Fileserver, but advise users to copy them into their own disc space before using them.

You can't use a printer driver and !Spooler from the same machine, as they will interfere with each other. Some programs, including Maestro, may not work with !Spooler.

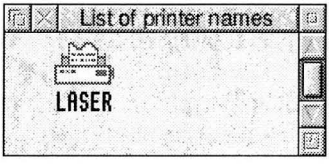
You can't run more than one copy of !Spooler on a single machine.

If you use the station running !Spooler for other applications, any action that causes a Wimp error box to appear on the screen will stop !Spooler operating. There is also a limited number of Wimp error boxes that can be initiated by the spooler itself, such as `Disc full`, that will require your intervention.

## Loading !Spooler

You can run !Spooler from the same machine as !Server, or from a different one. To load !Spooler, double-click on its icon in the directory display. The Spooler icon appears on the icon bar with the caption Ready:

You can set up to eight real or logical printers to be controlled by the spooler. To see a window listing the printers available, click on the !Spooler icon on the icon bar.



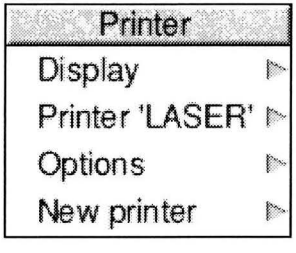

From this window, you can set up and control the printers handled by the spooler. The menu commands used to control the printers are described below.

If you double-click on one of the printer icons in this window, a status window for that printer's queue appears. The status window is described later in this chapter.

If a user sends data to a printer called `Print', the default printer will be used; this is the first printer in the list. If the user then selects a different printer, any files later sent to `Print' will be sent to the latest printer used instead of the first in the list.

## The spooler menu

You can control the display of icons, create a new printer definition or modify an existing printer definition using commands in the menu displayed from the spooler display. If you press the menu button when the pointer is in the display and a printer is selected, or when the pointer is over a printer icon, this menu is displayed:




### Display

Allows you to control the display of printer icons.

### Printer `name'

Allows you to set various options for the selected printer icon.

### Options

Allows you to state whether the selected printer icon is for a PostScript printer, whether a status window will be opened when the spooler is started up and whether the printer will begin printing a long file before the file has finished spooling.

### New printer

Lets you give a name for a new printer definition.

### Controlling the format of the spooler display

You can choose how the printer icons are displayed using the **Display** command in the spooler display menu. You may choose to show **Large icons**, **Small icons** or **Full info**.

## Controlling printer definitions

The Advanced Level 4 Server is supplied with five printer definitions already set up. You can create and use up to eight printer definitions. This allows you to set up a serial and a parallel printer connected to the station running !Spooler, and to use network printers or files.

### Creating a new printer

To create a new printer definition, move the pointer over the option **New printer** in the spooler display menu and off to the right to display a writable icon for the new printer name. Type a name up to six characters long and press the Return key. An icon for the new printer definition appears in the display (unless you already have eight printers, in which case another is not allowed).

The name you give can be used by users sending jobs to the printer, and is shown in the !Spooler status window for the printer.

### Moving printers

You cannot alter the default printer by deleting the first printer in the list and recreating it as the first printer is automatically protected against deletion. If you wanted to swap two printer definitions, Laser and Matrix, for example, you would need to follow these steps:

1 Make a note of the options and serial settings of both printers.

2 Rename Laser to Temp, then Matrix to Laser, and finally Temp to Matrix.

3 Reset the options and interface parameters to the correct values for each name.

4 Check that the header and footer files inside the printer directories are correct.

## Setting options for a printer

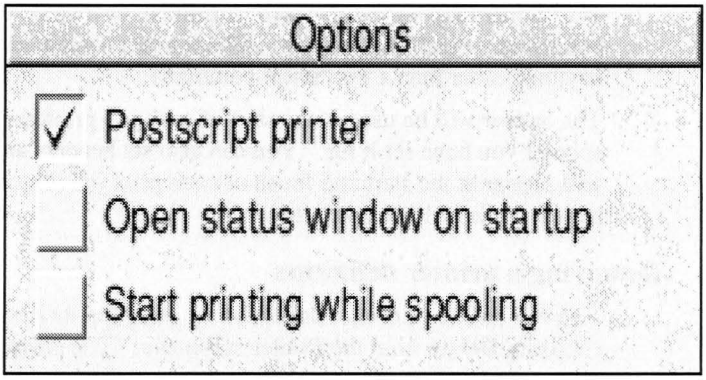
To set up a definition for the new printer, use the menu commands **Printer `name'** and **Options**.

If you want to rename the printer definition, move the pointer off to the right of the **Rename** option and type a new name in the writable icon, then press the Return key.

Set the printer to **Parallel, Serial, Network** or **File** by clicking on the appropriate line of the menu. There will be a tick against the selected one. If you choose **Parallel** or **Serial**, the printer must be connected to the appropriate port of the spooler station. If you choose **Network** or **File**, you must then give the station number or name of the printer on the network, or the name of a file to receive printed output. If you use a file, each print job sent to it will overwrite the existing contents of the file.

If a user is working on the station running !Spooler, he or she can send files to a spool queue by setting output from the printer driver to file and directing it to the !Spooler directory for the printer definition he or she wants to use.

You can set extra choices with the **Options** command, which displays this dialogue box:




Click on the appropriate option icons to place a star beside each option that you want to set on.

Set **Postscript printer** on if you want to configure the spooler to manage a PostScript printer. The spooler will then send a header file in front of data from non-PostScript applications (such as 1st Word Plus) which will enable the printer to interpret and print the data file. This file is a text file, called PSHeader. It is stored inside the !Spooler directory.

If you set the next option on, a spooler status window for this printer will be displayed whenever you load !Spooler (the status window is described below). You can remove the status window at any time by clicking on its Close icon, and you can re-display it by clicking on the printer icon in the spooler directory display.

The final option instructs the printer to begin printing before the whole file has been spooled. This may be useful if users are likely to send very long files to the printer as it saves time.

When you have chosen the printer port, station number or file name, and have set any other options you want, use **Save choices** to keep your selection.

## Defining a banner

A banner is a piece of text which will be printed at the start of each page of a print job. If you want to define a banner, display the menu and move the pointer over **Printer `name'** and off to the right to **Banner**; this has a writable icon for the banner. Type the text you want to use and press Return. It may be up to 128 characters long.

The banner may be text that will be printed, or it could be a PostScript command. PostScript printers will not understand a banner that is anything other than a PostScript command.

The banner will be used at the start of each job printed using the spooler you have set it for. You can also set headers and footers that will appear at the start and finish of each print job (but not of each page). This is described below.

### Removing a printer definition

You can remove a printer definition by selecting its icon and then choosing **Delete** from the Printer sub-menu. The printer icon will disappear from the display, and the printer will no longer be available to users. If there are any jobs in the queue these will not be printed.

When you delete a printer definition, the directory bearing its name inside !Spooler is also automatically deleted. This directory is used to store spooled files, and will no longer be needed if you have deleted the printer definition.

### Defining headers and footers

As well as a banner which prints at the start of each job, you can define a header and/or footer. A header will be used at the start of each print job, and a footer at the end of each job. These may be text strings, or printer commands.

To define a header or footer, open the printer definition directory inside !Spooler and edit the text file Header or Footer. To open !Spooler, hold down the Shift key while you double-click on its icon in the directory display.

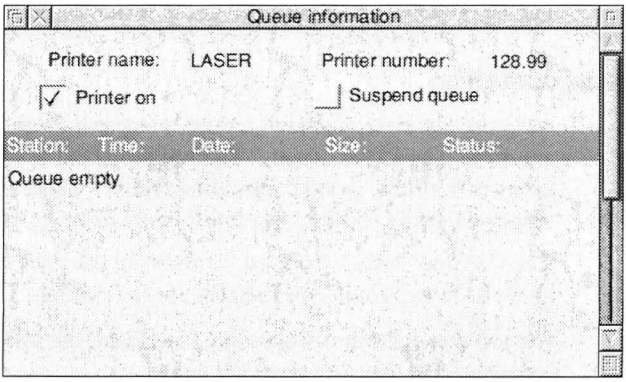
Most PostScript printers need a Control-D [04] character in the footer file to terminate print jobs properly. The printer Laser supplied on the Advanced Level 4 Server distribution disc has this set.

## !Spooler status windows

When you click on a printer icon in the spooler display, a spooler status window for that printer appears. This reports the state of the print queue and allows you to manage the queue. The status window shows:

- the printer name and number (which you can't alter from this window)
- whether the printer is on (so that jobs can be sent to the printer)

- whether the queue is suspended (so that jobs are not printed, but remain in the queue waiting)
- details of jobs in the print queue, showing the number of the station that originated the job, the time and date it was started, the size in bytes of the file and whether the job is pending, printing or suspended.




You can turn the printer on and off by toggling the **Printer on** setting. If you turn the printer off, printing will stop immediately. Printing will restart when you turn the printer back on. Alternatively, you can halt printing one job using the **Stop printing** option from the printer driver sub-menu on the client machine.

You can suspend the queue temporarily using the **Suspend queue** setting. Any job which is being printed will continue to print, but the next job will not start to print when the current job has finished. Users can continue to send jobs to the queue, but none will be printed until you turn off **Suspend queue** to restart the queue.

The list of jobs in the queue begins with the most recently added job. The file that is currently being printed will always be at the top of the list. If there are too many files for you to be able to see all the details at once, use the scroll bar to move through the list.

When the printer is printing a file from the queue, the status window shows how much of the job has been done by displaying a `job done' percentage. If the printer is set so that it does not start printing until it has received the whole file, this shows the proportion of the whole file that has been printed. However, if you have set the spooler to start printing before spooling has finished, this figure won't be accurate until all the job has been spooled, since the spooler can't tell how long a

document is until it has received it all. The status window also reports the percentage of header and footer files printed as they are processed; take care not to mistake this for the figure relating to the main part of the print job.

You can display a status window for each queue. However, displaying status windows uses processing power, so the spooler will run more quickly if you do not leave the status windows on screen unnecessarily.

## Queue information

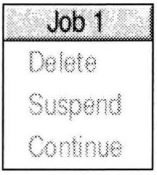
Only the top sixteen jobs in a print queue are displayed, even if there are more jobs in the queue. The top job is the first to be printed and jobs are normally printed chronologically. There is no hourglass displayed while waiting to print or while printing.

The size and status displayed for items in the print queue is a rough guide as to the volume of data sent to the printer.

If a job that is currently spooling is deleted, the client station will receive a Not listening error message.

## Managing the queues

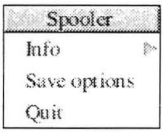
When you have a status window on the screen, you can display a menu by pressing the menu button with the pointer over one of the jobs in the queue:




This menu allows you to remove items from the queue (using **Delete**), and to suspend and restart a single job in the queue. If you suspend a job, this one will not be printed until you use **Continue** to add it back into the queue. You can delete any job, including the one currently being printed, and it will be abandoned.

## The !Spooler icon bar menu

Spooler options are saved using the Save options command in the !Spooler icon menu:




### Info

Gives details about the release of !Spooler you have.

### Save options

Allows you to save the settings you have made from the spooler display.

### Quit

Removes the spooler.

## Closing down the spooler

To close down the spooler, select **Quit** from the spooler icon bar menu. This removes the spooler icon from the icon bar and closes down all the queues. If any jobs are being printed, they stop. However, the spooler stores the files in the queues on disc and will print the remaining jobs when it is next loaded.

If you want to close down a single queue, or close some and leave others on, use the **Printer on** switch in the status window for each printer definition.

## Problems with BBC and Master applications

A few applications for BBC and Master Series computers print one line at a time, using the commands VDU2 and VDU3 to initiate and end printing of each line in turn. If you try to print from one of these applications using the print spooler, it is possible that other print jobs will be printed between lines. This is because the spooler interprets the end-of-line command as the end of the print job, and goes on to process the next job in the queue. If you want to print from an application that uses this method, you will need to do so when no other users are sending jobs to the print queue.

### !Spooler error messages

Some errors cause the machine running !Spooler to display error message dialogue boxes. If the same machine is running !Server as

!Spooler, !Server will be halted as well as the spooler when these are displayed.

If the spooler queue is full and a client station tries to send a print job, a message No reply may appear at the client station.

## Changing the configuration of !Spooler

Don't change the configuration of the printer spooler while there are active and printing jobs in the print queue. Suspend jobs first, or the computer running !Spooler may lock up.

If a printer is deleted from !Spooler's list, you don't need to delete the directories associated with the printer spooler as these are deleted automatically in this version.

## Disc space

Make sure there is enough free space on the hard disc of the computer running !Spooler to hold files sent to the print queue. Remember that bit-mapped data such as Paint files and DTP data on a dot matrix printer will occupy approximately 1MB per page.

## Deleting print jobs

If a print job stops because of a printer error, such as running out of paper, don't delete the print job until the printer is back on line. If you delete a print job while the printer is off-line but a job is in progress, other applications running on the station will halt.

## Printing to a file

If you are sending the print output to a file, make sure you give a full pathname in the filename window.

## Using the station running !Spooler as a client station

It is possible to use the computer running !Spooler as a client station, although this is not recommended as it can be disruptive to people using the spooler. If you want to do this, a printer driver must be loaded and set to print to a file, not directly to the printer attached to the station. The file created to hold printer output should be inside the Spooled directory of the printer. For example, the file pathname ADFS::4.$.!Spooler.Laser.Spooled.Direct might be suitable. The file name must not start with any of these letters: A, L, S or P.

# Part IV:
# Users and the Fileserver

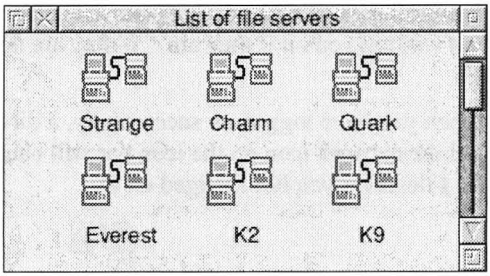
# 11 Using the Fileserver from the desktop

This chapter explains how the Fileserver appears to users, and how they can log on to and make use of the Fileserver and print spooler from the RISC OS desktop. If you wish, you may photocopy this chapter and give a copy to each desktop user of the Fileserver.

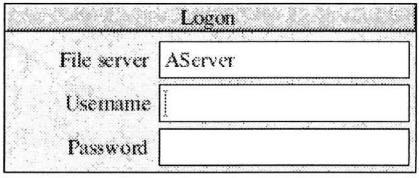
The instructions for users given in this chapter apply to people using client machines running the RISC OS desktop; if you need to use the *Commands, look in *Appendix B: *Commands* for a summary of their functions. For further information on *Commands to use with the Fileserver, see the *RISC OS 3 User Guide* (there is a list in the section *Filing system commands* within the chapter *Types of star command*), and the *Econet Level 2/3 File Server User Guide.*

## Logging on

The computer on which the Fileserver software is installed is called the *Fileserver*; computers linked to it and able to use the Fileserver are called *client machines*. Before you can use the Fileserver on a client machine you need to log on to it using the network logon dialogue box. If there is more than one Fileserver on your network, you will need to choose one to log on to. Use **FS List** in the network icon bar menu to open a display showing the Fileservers available. There will be an icon for each Fileserver, with the name below or beside each one. If a Fileserver station has more than one storage device available for you to use (for example, an extra hard disc, a RAM disc or a SCSI hard disc), there is an icon for each device in the FS List window. You can log on to whichever device you want to use.




If you click on one of the Fileserver icons, the logon dialogue box will appear, with the Fileserver name already in the first writable icon. For example:




You can also display this dialogue box by one of the following methods:

- Clicking on the network icon on the icon bar.
- Choosing **Logon** from the **network** icon bar menu.
- Choosing **Logon** from the **FS List** display's menu.

A default Fileserver name will appear in the first writable icon if you use either of these three methods. If there is more than one Fileserver on the system, you may need to change the name to show the Fileserver you want to use. The section *Setting other options* on page 123 explains how to set the name of the Fileserver you use most frequently to be the default name.

The next two writable icons in the dialogue box are used to verify your user identity.

## User identification

In the second writable icon, type your user name as set by the Network Manager. In the last writable icon, type your password, if you have one. Your password will not appear on the screen as you type: this is to prevent other users seeing your password and being able to log on with your identity.

The Fileserver will check that your user name and password are valid, and will log you on if they are. If they are not valid, your logon will fail.

When you have logged on successfully, a directory display will appear and the network icon on the icon bar will change to show the name of the Fileserver you have logged on to.

### User directory

Users generally have their own directories on the Fileserver in which they can work and save files. Your own root directory will normally have the same name as your user name. It is represented on screen by the character `&`, so if you logged on to a Fileserver on a hard disc called History, the directory display for your directory would have the title `net#History:&` or `Net::History.&` (depending on the version of RISC OS fitted to your computer).

Once the Fileserver has checked your user name and password, it will look for the user directory corresponding to your identity. If it finds one, a directory display will appear showing the files and directories in your own root directory on the Fileserver. If it doesn't find a user directory, the directory display will show the files and directories in the root directory of the Fileserver; however, you won't `own' this directory (unless you have the System privilege of a Network Manager), and so your access to many of the files and directories it contains may be restricted.

### Group users

The Network Manager may also set up some group users. The group will consist of several users grouped inside a directory. These users own their own files and have the usual rights to them.

If your directory is part of a group, your username may have two parts, incorporating your own user name and the group name in the format:

*`groupname.username`*

For example, if the group is called ITGroup, your name could be

`ITGroup.Jo`

This is the name you would have to type in the username writable icon in the logon dialogue box.

You do not need to have a user name with this format in order to belong to the group *ITGroup* ie: your user identity may be *GStephenson* who belongs to the *ITGroup* and your User Root Directory (URD) may actually be $.Year64.ITGroup.User42.

## File ownership

In general, you can look at, change and delete any files in your own user directory, but cannot change or delete files owned by someone else, though you may be able to look at them. Some files and

directories may be hidden from you completely, so that you do not even see their icons in the directory display.

## Using files and programs

You can use files and programs on the Fileserver in exactly the same way as you would use them directly from your own computer. For example, if a form letter has been set up to be available on the Fileserver, you can double-click on its icon in the directory display to load it. It loads from the hard disc on the Fileserver host machine into your own machine. The advantage is that many users can use the same formats and they don't need to use up space on their own floppy or hard discs storing a copy of each. If you are going to load applications like this, let the Network Manager know, because you will need a suitable boot file which the Network Manager will be able to create. Alternatively, the Network Manager might ask you to copy applications into a RAM disc on your own machine before you load them. The section *Using a RAM* disc on page 124 explains how to do this.

When you want to save a file in your Fileserver directory, drag its icon into your root directory or a directory in your root in just the same way as you would if you were saving a file on your own floppy or hard disc. If you try to save a file in someone else's directory, and you do not have the privilege to do so, you will get the error message `Insufficient access`.

### Using files from other users' directories

You may sometimes need to use a file that is stored in another user's directory. You can generally look at but not save any changes to a file in someone else's directory. However, you can change the file and then save it in your own directory by dragging the Save file icon to your own directory display.

To load a file from another user's directory, you need to display the Fileserver's root directory, and then move down the directory structure into the other person's directory. To display the Fileserver's root directory, use the command **Open $** in the network/Fileserver icon bar menu. The directory display will show all the user root directories. Double-click on the directory icon for the user whose files you want to use. There may be some icons missing from the directory display: these are for files that the owner has locked against all public access. If you try to load an application from someone else's directory, it will generate an error message if the owner has not given public read access

to it and the files it uses. There are other reasons why you may get an error message doing this, too. Ask the Network Manager for advice if you want to load applications from another user's directory.

## Setting the access rights to your own files

Usually, if you create a file in your own user directory, you will be able to look at it and alter it at any time and even delete it. By default, other users will have no access to your files.

You can set the access you want other people to have to your files using the **Access** command from the file's directory display menu. Select the icon in the directory display and choose the **File `filename'** option in the menu, then use **Access** in the sub-menu. The RISC OS 3 *User Guide* explains how to use **Access**.

The Owner rights set what you can do with the file; the Public rights control what other users can do with the file. You can lock the file against deletion to prevent you accidentally deleting it yourself, but you don't need to set this to prevent other users deleting your file as it is locked to them anyway.

If you allow public write access to your file, other users will be able to alter it without your knowledge. If you allow public read access only, they will be able to look at the file but not alter it. If you do not allow any public access at all, and the Network Manager has made the appropriate setting, the file will not even appear as an icon in your user directory when the directory display is displayed by other users (though it will be visible when you display the directory display yourself, of course, or when the Network Manager logs on as a privileged user and looks at your directory). Never completely remove the access rights to your files by denying read and write access to yourself as well as to others.

You can also specify the access rights to a directory as well as to the files within it and you can lock a directory against deletion using **Access**. If the Network Manager has enabled the hidden objects option and the directory has no public read or write permission, the directory will become a hidden object and will not be visible to other users.

The access rights described above apply to most users. In some cases, the Network Manager may give you a different user status which prevents you resetting your password or boot option (described below),

or looking at any directories other than your own. If you are not sure about your privileges, ask your Network Manager.

## Setting your password

The password you give when you log on is compared by the Fileserver with its record of your user name and password. This is a security procedure to prevent other users logging on with your identity and consequently gaining the same access to your files as you have. You can (and should) change your password occasionally to help preserve the security of your files. To change your password, you need to use the *Pass command. Press F12 to move to the command line and type

```
Pass oldpassword newpassword
```

The first time you set a password you may not have an old password, so use the null string "" in place of *oldpassword*. For example, to set your password for the first time to Hebrides, type

```
Pass "" Hebrides
```

If you later wanted to change this to Shetland, you would type

```
Pass Hebrides Shetland
```

Your password must be at least six and not more than 22 characters long.

If you get the message `File pass not found`, you are using ADFS; the `*Pass` command is a network filing system command and is not recognised by ADFS. Type `Net` at the command line to switch to NetFS and then try again.

You can hide your password while you are typing it in to prevent anyone else seeing it as you type. To do this, type `Pass` and then press Return; the cursor will move down a line, and everything you type will be hidden until you press Return again. Your password won't be displayed on the screen at any point.

When you are choosing a password, do not select something very obvious that could be guessed by someone else. Do not, for example, use the date of your birthday, the name of a member of your family or a pet, your telephone number, or the registration number of your car.

## Setting boot options

If you have Normal or System privilege, you can create a boot file that will be run each time you log on to the Fileserver if you often want to

use the same options or applications each time. To do this you will need to follow these steps:

1 Copy a suitable boot file into your user root directory.

2 Use `!Configure` to set Auto Boot on, or use `*Opt 4,2` from the command line.

3 Set the default filing system to be NetFS using `*Configure FileSystem Net` from the command line.

The following instructions explain how to set your station so that it will run them when you log on to the Fileserver. Ask the Network Manager to create a suitable boot file for you.

### Setting the station to run the boot file

To set the computer to run your boot file, you need to set Auto boot on.

If you have a RISC OS 3 station, use the setting **Autoboot** in the **Desktop boot** option from the system icon bar menu.

The boot and desktop boot files must always be stored in your user root directory on the Fileserver. The boot file will only be run when you log on to the Fileserver, not when you turn on or reset your computer.

## Setting other options using !Configure

If !Configure is enabled by your Network manager and you always want to use the same Fileserver, you can use the !Configure window to set the default Fileserver name in the logon dialogue box to the Fileserver you want to use. (This is only useful if there is more than one Fileserver on the network; if there is only one, and its number is 0.254, this will appear as the default anyway.)

Display the !Configure window and type the name of the Fileserver you want to use in the writable icon marked **Network Fileserver**. In future, whenever you click on the network icon or use **Logon** from the network menu, this server's station number will appear in the first writable icon of the logon dialogue box.

If you always want to use the network printer, you can set the default printer from the !Configure window as well. Click in the box beside the option icon marked **Network Printer Server** to choose this as the default printer. You will also need to set up a suitable printer driver before you can send files to print. This is described below, in the section *Using the print spooler.*

The settings you make with the !Configure application are specific to the station you use and are not remembered with your user identity if you use another station.

## Using the print spooler

The Fileserver print spooler allows users on the network to send files to a printer which will process each in turn. Your files are added to a queue, and will be printed when the printer has finished the other jobs ahead of yours in the queue. You can continue to use your station after you have sent your print job and while it is waiting in the queue and being printed.

### RISC OS 3 machines

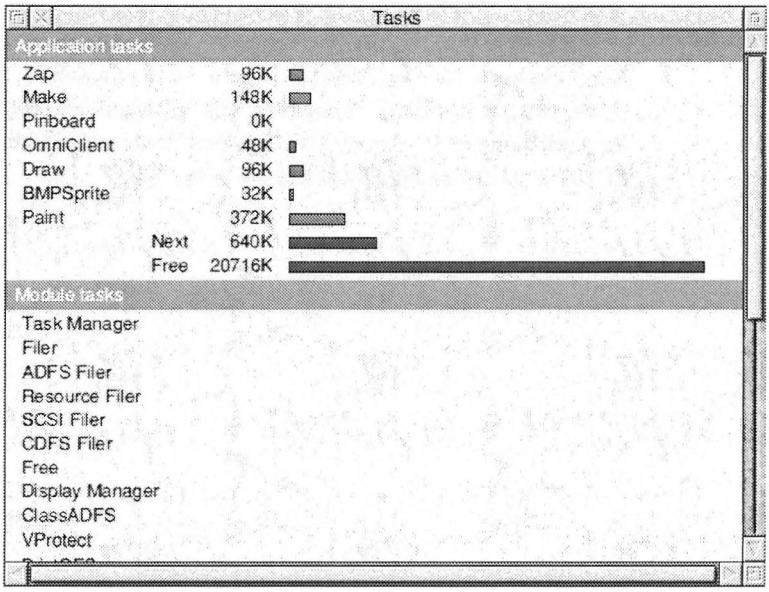
If you are using a RISC OS 3 computer, the printer drivers are included inside the application !Printers on the Apps1 disc. Load !Printers by double-clicking on it and display the icon bar menu for the printer driver. Use the option **Printer control** to display a dialogue box and then press the **menu** button with the pointer over Connections. Check that the correct network printer is selected. There is a more detailed explanation of this procedure in the RISC OS 3 *User Guide*.

When you want to send a file to the printer, drag its icon to the printer icon or send it to the printer using a print command within the application as you normally would. (For word processor files and other files that do not use the standard Acorn printer drivers, follow the usual procedure for printing these files and do not drag them to the icon bar.) Your file will be added to the print queue and printed when the printer is available.

## Using a RAM disc

Sometimes you may want to use programs and printer drivers stored on the network. In many cases, it is best to copy these on to your own machine before you load them. If you don't have a hard disc on your machine, you can create a RAM disc to hold files and directories during your session on the computer. A RAM disc is a way of storing data temporarily; it is quicker to access files and programs stored on a RAM disc than those stored on the network or a hard or floppy disc.

To create a RAM disc, click the **menu** button on the Acorn system icon at the right end of the icon bar and choose **Task display**. This window will appear:




Use the scroll bar to move down through the task display window until you see the RAM disc line.

Click to the right of this line, and drag the bar that appears in order to allocate space to the RAM disc. A RAM disc icon appears on the icon bar.


Click on this to open a directory display. You can copy applications into this just as if it were any other kind of disc. However, the RAM disc will disappear when you turn off or reset your machine, so don't use it to store any of your work, only use it for copies of applications and printer drivers kept on the network or on ADFS discs elsewhere.

## Logging off

When you have finished using the Fileserver, log off by selecting **Bye** from the Network/Fileserver icon.

## Fileserver closedown

Sometimes the Network Manger may want to close down the Fileserver while you are working. Your files will be closed automatically. You may get a message warning you that the Fileserver will be shut down, giving you time to finish and tidy up your work.

# 12 Using the Fileserver from the command line

If you are using the Fileserver from the command line on a BBC or Master series computer, the commands you need to use will be the same as those used with any of Acorn's previous fileservers, Command line operation is still supported by the Advanced Level 4 Server. See Appendix B for a summary of the commands..

# Appendix A: Simple installation

This appendix gives brief instructions for simple installation of the Advanced Level 4 Server. It is intended for network managers who are already familiar with Acorn networks, and who just need a quick guide to installation. Before carrying out this installation, you should first have ensured that:

- the correct hardware is available in all participating machines
- the physical network is correct and working.

You'll find guidance on this in the *AUN Manager's Guide* and in the *Econet Design and Installation Guide.*

Furthermore, if you're running AUN, you should ensure that the software to run it is correctly installed. In the simplest case - where each station has the necessary software in ROM on its network interface - this is simply a matter of issuing a few configuration commands. Again, you'll find guidance on this in the AUN Manager's Guide, including a similar appendix to this.

## Configuring the Fileserver

If you haven't already set the Fileserver's station number as part of installing the AUN software, you should do so now. Take a floppy disc with the SetStation utility on it (for example the Level4 Fileserver application disc). Insert the disc into the machine that is going to act as the Fileserver (i.e. one that has a hard disc), and then:

1 Click on the floppy disc icon.

2 Double click-select on the SetStation program.

3 Type 254 at the prompt.

4 Reboot the machine.

This process will set the station number of this station to 254, which is the customary number for a fileserver.

## Installing the Fileserver

This manual contains a great deal of advice on setting up a Fileserver, and there is no substitute for taking the time to read through it carefully. If a number of the following points apply to your Fileserver:

- it will have to handle hundreds of users
- it will be accessed by more than six machines at any one time for intensive tasks
- it will be used for application serving
- it does not have a normal ADFS hard drive (or a standard IDE drive as per the A5000 et al)

then you are strongly advised to read the rest of this manual. However, if you are setting up a fileserver which will only be accessed by a small number of users for saving their own data then you may take some short cuts.

Make sure that the root directory ($) of the hard disc is not littered with applications and resources. Ensure that files are grouped in a reasonably tidy and logical manner; this will make it easier for other users to find things on the fileserver. Create a directory structure on the hard disc which matches the one in the following illustration.

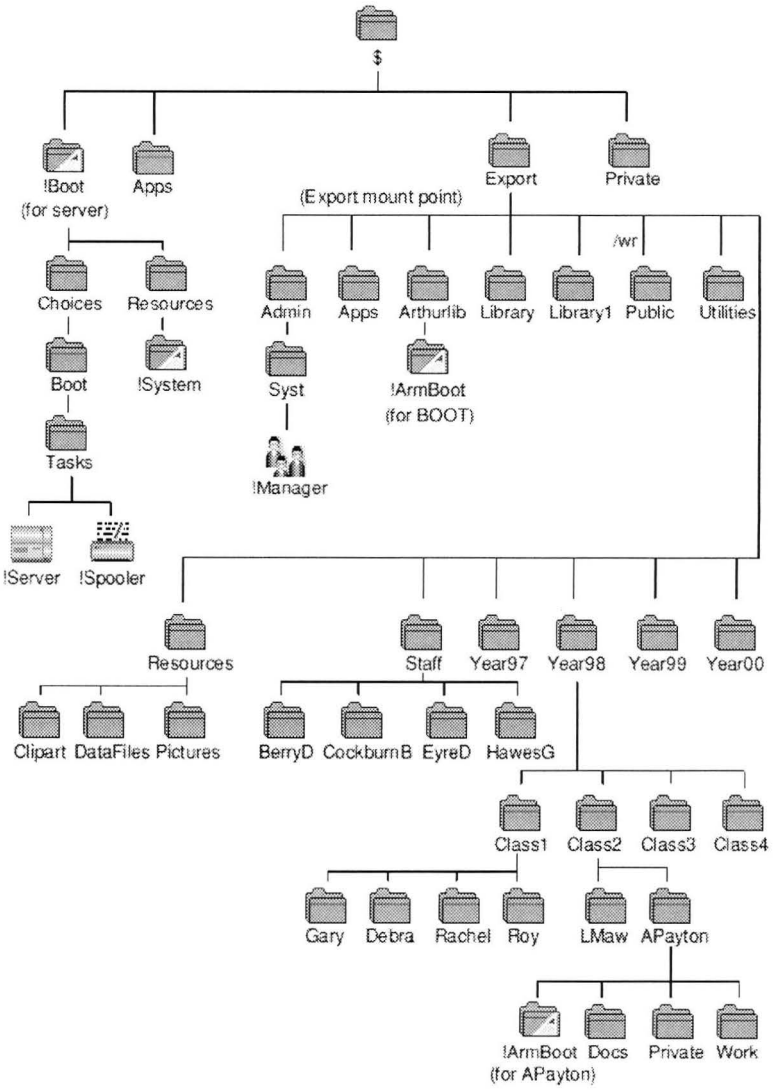


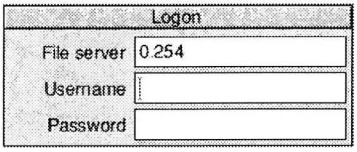

**Figure A 1 - Advanced Level 4 Server directory structure.**

As you become more experienced with the management and use of the fileserver you may wish to change this structure, but for the time being it is important that you copy this structure exactly. You can find copies of these applications on either the Advanced Level 4 Server disc or the applications discs supplied with the machine.

The directory called Syst will be needed when you logon as a system privileged user to perform day to day management tasks.

Name the hard disc with a name that you want it to be seen as over the network. Something like *Server* will do, but not %^&76! Disc names of 10 characters or more in length are best avoided at this stage, as their use requires changes to be made to the exports file in Advanced Level 4 Server.

Double click on the **!Server** icon, when the server's icon is displayed on the icon bar your server is running. You should now be able to log on to the Fileserver from another station. At the other station, choose **Logon** from the menu for the **Net** icon on the icon bar. Type the number of the Fileserver on the top line, type `Syst` as the user name, and just hit Return on the last line, since no password is required:




A filer window will open, showing the contents of the directory $.Syst. To access the whole of the disc, choose Open `$' from the Net icon bar menu. A filer window will open, showing the root directory of the Fileserver, and you can share this data as if it were your local hard disc. Refer to the section *Using the system - Users and !Manager* on page 133 if you wish to restrict user access to the Fileserver disc, and to the section *Tuning the system - !ArmBoot files et al* on page 135 if you wish to set up !ArmBoot files for users - together, of course, with the rest of this guide.

## Installing the Spooler

You may wish to share a printer between the machines on the network. This can be done with the !Spooler application. Firstly, attach the printer to the machine - it can be any machine on the network but you are strongly advised to ensure that this machine has its own local hard disc which contains the copy of !Spooler. Where the number of hard discs on the network is limited it might be sensible to connect it to the machine that is acting as a Fileserver, and reserve this machine as a dedicated resource.

Double click on the !Spooler application, and then click-select on the **Spooler** icon on the Icon bar. This will open up a window with two printers displayed; **Matrix** and **Laser**. In this default configuration,

**Matrix** is configured to print to the Parallel port, and **Laser** is configured to print to the Serial port. You may copy or delete these printers, or alter the connections by using the printer icon bar menu and setting them up as required.

On a client machine, load a copy of !Printers (either from local disc or from the network Fileserver). This note assumes familiarity with this application, and that you can set it up with the correct printer definition file. If you are unsure how to do this then please refer to the *Printing chapter* in the RISC OS 3 *User Guide*. The setup sequence is shown in the illustration below. Choose **Printer Control-** from the Printers icon bar menu. Then choose **Connections-** from the menu for the Printer Control dialogue box. In the Connection box click on the **Econet** button, and select the appropriate printer name from the associated menu. Save the options, and you are now ready to print.

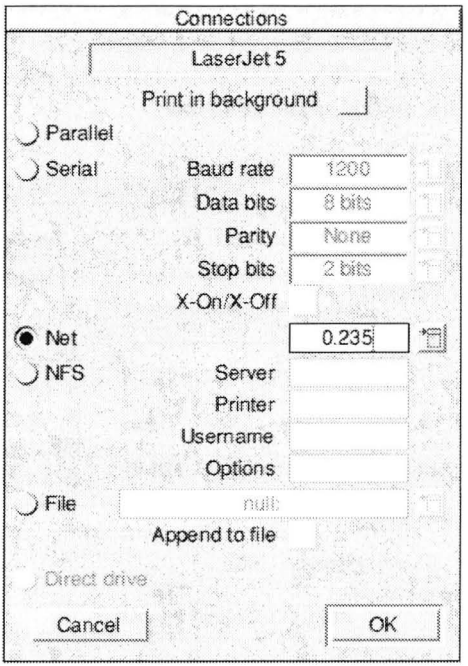



**Figure A 2 - Configuring !Printers for Network use.**

## Using the system - Users and !Manager

As described earlier, you can log onto the Fileserver as user `Syst'. This user has special privileges, one of which is `ownership' of all the

Fileserver disc, and can therefore be rather dangerous. You should set a password for this user as soon as possible, which you must keep a closely guarded secret. You'll also need to create other users of the system who can have access to just those areas of the Fileserver that they need. For these operations, you need to use **!Manager**.

You may use **!Manager** on the station that is acting as the server, but not whilst the server is running. However, we strongly recommend that you use it on one of the client machines connected to the network.

Load **!Manager**, and click on its icon on the Icon bar. After a pause, a window opens with a display of all the Acorn fileservers available on the network. In this single-server network there will be either one or two servers - shown by the disc name, or `local server' if you are running **!Manager** from the server machine. Selecting this Fileserver will open a window with all the users in it: Syst, Guest and Boot.

Double Click-select on Syst, which opens the profile for this user. Enter a suitably secure password (minimum 6 characters, max. 21), and click on **OK** as shown below:

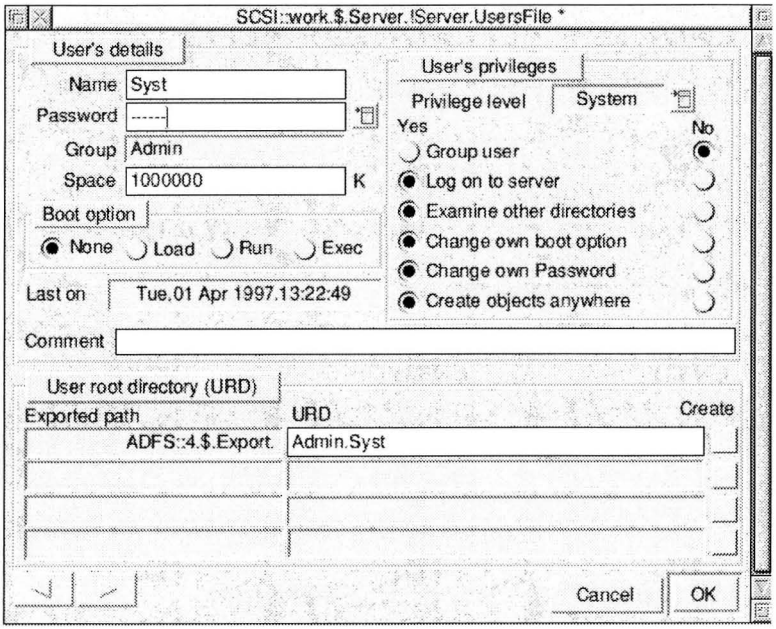



**Figure A 3 - Setting the password for the user `Syst'.**

You may wish to create new users, which can be done intuitively via the Users window, but do refer to the section *Adding new user identities* on page 82 for a full description. If you produce a user called, for example `Class1' or `JSmith' and then click on **OK**, it will produce what is called a User Root Directory or URD for that user. This means that if that user logs onto the Fileserver as `Class1' then the directory viewer seen is the Class1 directory (which will be empty, of course) This is the starting point for this user on the Fileserver, where private data and applications can be safely kept.

If you have decided to enable the Space Accounting feature of the Fileserver (available from the icon bar set-up menu) then you may use **!Manager** to assign appropriate space to each user, simply by setting the required amount on the user profile window. Space accounting is set on by default.

## Tuning the system - !ArmBoot files et al

It is often a very good idea to ensure that machines, when they are switched on, log onto the Fileserver automatically and load the required system resources. These resources include **!System**, which holds copies of additional modules which may be required by applications, **!Fonts** which holds fonts that are not in the RISC OS ROMs and **!NetUtils**, which ensures correct network operation. To do this, it is necessary to create a small !ArmBoot file, which is an obey file that is run by a machine when it logs onto the Fileserver.

- Start !Edit on the Fileserver machine and create an Obey file. If you are running AUN over Ethernet, type:

```
*RMReInit BroadcastLoader
*Unplug BroadcastLoader
*Desktop -f Deskstart
```

  (It is important to disable Broadcast Loader, as it adversely affects the performance of Ethernet networks.) If you are running over Econet, just type:

```
*Desktop -f Deskstart
```

- Now save this file as name !ArmBoot in the root of the Fileserver disc, ensuring that its access has been set to Public Read (WR/r).

- Next create a Text file and type into it:

```
*Filer_Boot Net::AServer.$.!System
*Filer_Boot Net::AServer.$.!Fonts
*Filer_Boot Net::Aserver.$.!NetUtils
```

and save it under the filename DeskStart in the root of the Fileserver. Ensure that it also has its access rights set to public read.

- Now using !Manager, open up the profile for the user Boot, and make sure it has the boot option set to Run. Next visit each client station that you wish to boot automatically and press F12. At the * prompt type:

```
*Configure Boot
*Configure FileSystem Net
*Configure FS 254
```

and then reboot the machine. It will then log onto the Fileserver as user Boot, run !System, !Fonts and !NetUtils. This will save a lot of time on a busy network as it will ensure that the machine performs the minimum of operations when the user logs on by his or her user name.

For printing, or moving data between applications, the RISC OS machine needs to have access to an application called **!Scrap**. This application holds temporary data during these operations. We advise you to copy **!ArmBoot** (which contains !Scrap) from the Advanced Level 4 Server support disc into the Libary directory located at the export mount point, so that they each have access to this resource. The boot sequence that the client machine executes needs to run the !Scrap application to set up the necessary system variables and directories.

The appropriate use of the **!ArmBoot** application can greatly enhance the service provided to the users of the network. It is possible, with boot files, to arrange for the root directory ($) to be automatically opened and for certain applications to be already loaded when a client logs onto the Fileserver. This involves the use of another !ArmBoot file, that this time exists in the Users Root Directory (URD). An example might be:

```
*Filer_OpenDir Net::Level4.$.Apps
*Run Net::Level4.$.Apps.DTP.!EasiWrite
```

Again, save this Obey file in the User Root Directory, and ensure that the user has the boot option set to Run.

## Hints and tips

In the desktop, in order to ensure the best possible performance, you should select the lowest possible resolution screen mode available - 12, 11 or even 0. Do not have the Status window open unless you really want to monitor requests to the Fileserver.

Depending on the hardware specification of your Fileserver a sensible number of client machines to support at any one time might be 40, as this number is known to provide acceptable performance in the vast majority of circumstances. As circumstances change this figure may need to be revised. It is worth noting that some applications naturally load more slowly than others on a network, due to the number of files that are accessed during the course of loading. As a rough guide, Impression should load to 10 stations in less than 1 minute, and many popular applications are significantly faster than this.

You may wish to start the server automatically on power up. To do this, it is suggested that you use the !Boot file that comes with the product, but if you are adventurous, it is not difficult to write your own, or to utilise the desktop boot facilities provided by RISC OS 3.

# Appendix B: *Commands

This appendix introduces you to the commands you can use if you are not using the Fileserver from the desktop. Not all these commands are available on all station types. The section Command types and locations below shows which commands are available on each type of station. Network commands are only available when you are using NetFS; to switch from ADFS to NetFS, type `Net` at the command line.

The section **Command summaries* on page 141 summarises the commands.

## Command types and locations

This table summarises two types of information: which commands can be used on which types of computer, and where the commands are stored. If a `B', `L' or `F' is shown against a command it is available on that station type, otherwise it is not.

- `B' indicates a built-in command, provided by the station's ROMs.
- `L' indicates a library command, provided by the Fileserver library.
- `F' indicates a Fileserver command, provided by the Fileserver software.

| Command | Model B | Master | RISC OS | Notes |
|---|---|---|---|---|
| `*Access` | B | B | B | |
| `*AddFS` | - | - | B | RISC OS 3 onwards |
| `*Append` | - | B | B | |
| `*Build` | L | B | B | Model B: in DFS library only |
| `*Bye` | F | F | F | |
| `*Cat` | B | B | B | |
| `*CDir` | F | F | F | |
| `*Close` | L | B | B | |
| `*Copy` | - | B | B | Master: different format |
| `*Count` | - | - | B | |
| `*Create` | - | B | B | |
| `*Date` | L | L | - | |
| `*Delete` | F | F | F | |
| `*Dir` | F | F | F | |

| Command | Model B | Master | RISC OS | Notes |
|---|---|---|---|---|
| *Discs | L | L | - | Under RISC OS use *Free |
| *Dump | L | B | B | |
| *EnumDir | - | - | B | |
| *Ex | B | B | B | |
| *Exec | B | B | B | |
| *FileInfo | B | B | B | |
| *Free | L | L | B | |
| *FS | L | F | F | |
| *I am | F | F | F | |
| *Info | B | B | B | |
| *LCat | B | B | B | |
| *Lex | L | B | B | |
| *Lib | B | B | B | |
| *List | L | B | B | |
| *ListFS | - | - | B | |
| *ListPS | - | - | B | Not available under RISC OS 2 |
| *Load | B | B | B | |
| *Logon | - | - | B | |
| *Mount | - | - | B | |
| *Move | - | B | - | Under RISC OS use *Copy - D |
| *Net | B | B | B | |
| *NewUser | F | F | F | |
| *Notify | L | L | - | Available in RISC OS desktop |
| *Opt 1 | B | B | B | |
| *Opt 4 | B | B | B | |
| *Pass | F | F | F | |
| *PipeCopy | - | - | B | Not available under RISC OS 2 |
| *Print | - | B | B | |
| *Priv | F | F | F | |
| *PS | L | B | B | |
| *ReadFree | L | L | - | Under RISC OS use *Free |
| *Remove | - | B | B | |
| *RemUser | F | F | F | |
| *Rename | F | F | F | |

| Command | Model B | Master | RISC OS | Notes |
|---|---|---|---|---|
| *Run | B | B | B | |
| *Save | B | B | B | |
| *SDisc | F | F | F | |
| *SetFree | L | L | L | |
| *SetPS | - | - | B | |
| *SetType | - | - | B | |
| *Shut | - | B | B | |
| *ShutDown | - | - | B | |
| *Spool | B | B | B | |
| *SpoolOn | - | B | B | |
| *Stamp | B | B | B | |
| *Time | L | L | B | RISC OS reads station time, rather than fileserver time |
| *Type | B | B | B | |
| *Up | | | | |
| *Users | L | L | L | |
| *Wipe | - | B | B | |

## *Command summaries

This section summarises the filing system commands you can use to access the Fileserver from the command line. As noted above in the section Command types and locations, not all commands are available for all computers.

In all cases, the summary is of the most recent implementation. Some of the features and options listed, although present under more recent operating systems such as RISC OS 3, may not be available in machines running under older Acorn operating systems such as the BBC MOS.

For full details you should refer to the documentation supplied with your computers and networking hardware. These include the BBC User Guide, the *BBC Master Reference Manual*, the *Econet Level 2/3 File Server User Guide*, the *FileStore Network Manager's Guide*, the *RISC OS User Guide* and *RISC OS Programmer's Reference Manual*, and the *RISC OS 3 User Guide* and *RISC OS 3 Programmer's Reference Manual*.

## *ACCESS

*Access changes the attributes of all objects matching the wildcard specification. These attributes control whether you can run, read from, write to and delete a file.

Attributes are:

| | |
|---|---|
| L | Lock object against deletion by any user |
| W | Write permission for you (owner) |
| R | Read permission for you (owner) |
| / | Separator between your permissions and the public's |
| W | Write permission for the public (on NetFS) |
| R | Read permission for the public (on NetFS) |

If the Hidden objects option from !Server is enabled, locked files and directories will not be visible to users who don't have the privilege to use them.

```
*Access object_spec [attributes]
```

## *ADDFS

*AddFS adds a remote file server's disc to the list of file servers' discs that are known to NetFS. If only the file server is specified, then all its discs will be removed from the list.

```
*AddFS file_server_number [disc_number [:]disc_name]
```

## *APPEND

*Append opens an existing file so you can add more data to the end of the file. Pressing Escape finishes the input.

```
*Append filename
```

## *BUILD

*Build opens a new file and directs subsequent input to it. Pressing Escape finishes the input.

```
*Build filename
```

## *BYE

*Bye ends a filing system session by closing all files, unsetting all directories and libraries, and logging off the current fileserver.

```
*Bye [[:]file_server]
```

## *CAT

*Cat lists all the objects in a directory (by default the current directory).

```
*Cat [directory]
```

## *CDIR

*CDir creates a directory with the specified pathname and size.

```
*CDir directory [size_in_entries]
```

## *CLOSE

*Close closes all open files on the current filing system.

```
*Close
```

## *COPY

*Copy makes a copy between directories of any object(s) that match the given wildcard specification. Options are taken from the system variable `Copy$Options`, and those given to the command.

| **Options** | **(use `~' to force off, e.g. ~C):** | **Default** |
|---|---|---|
| A(ccess) | Force destination access to same as source | ON |
| C(onfirm) | Prompt for confirmation of each copy | ON |
| D(elete) | Delete the source object after copy | OFF |
| F(orce) | Force overwriting of existing objects | OFF |
| L(ook) | Look at destination before loading source file | OFF |
| N(ewer) | Copy only if source more recent than destination | OFF |
| P(rompt) | Prompt for disc to be changed as needed in copy | OFF |
| Q(uick) | Use application workspace as a buffer | OFF |
| R(ecurse) | Copy subdirectories and contents | OFF |
| S(tamp) | Re-stamp date-stamped files after copying | OFF |
| (s)T(ructure) | Copy only the directory structure | OFF |
| V(erbose) | Print information on each object | ON |

| Options | (use `~' to force off, e.g. ~C): | Default |
|---|---|---|
| | copied | |

```
*Copy source_spec destination_spec [[~]options]
```

## *COUNT

*Count adds up the size of data held in one or more objects that match the given wildcard specification. Options are taken from the system variable Count$Options, and those given to the command.

| Options | (use `~' to force off, e.g. ~C): | Default |
|---|---|---|
| C(onfirm) | Prompt for confirmation of each count | OFF |
| R(ecurse) | Count subdirectories and contents | ON |
| V(erbose) | Print information on each file counted | OFF |

```
*Count object_spec [[~]options]
```

## *CREATE

*Create reserves space for a new file. No data is transferred to the file. The optional load and execution addresses and length are in hexadecimal.

```
*Create filename [length [exec_addr [load_addr]]]
```

## *DATE

*Date displays the date. This command is not available on RISC OS computers.

```
*Date
```

## *DELETE

*Delete erases a single named file or empty directory.

```
*Delete object_spec
```

## *DIR

*Dir selects a directory (by default the user root directory) as the current directory on a filing system. Note that Release 1 of the Advanced Level 4 Server does not support the command *Dir ^.

```
*Dir [directory]
```

## *DISCS

*Discs displays the titles of available discs. This command is not available on RISC OS computers.

```
*Discs
```

## *DUMP

*Dump displays the contents of a file, in hexadecimal and ASCII codes. The optional file offset and start address are in hexadecimal.

```
*Dump filename [file_offset [start_address]]
```

## *ENUMDIR

*EnumDir creates a file of object leafnames from a directory that match the wildcarded pattern (by default `*').

```
*EnumDir directory output_file [pattern]
```

## *EX

*Ex lists all the objects in a directory (by default the current directory) together with their corresponding file information.

```
*Ex [directory]
```

## *EXEC

*Exec instructs the operating system to take its input from the specified file. If no parameter is given, the current exec file is closed.

```
*Exec [filename]
```

## *FILEINFO

*FileInfo gives full file information for the specified object(s).

```
*FileInfo object_spec
```

## *FREE

*Free displays the total free space remaining on a disc, and - on RISC OS machines only - the user's total free space.

```
*Free [disc_spec]
*Free [:file_server] [user_name]          (NetFS syntax)
```

## *FS

*FS selects the current file server, restoring that file server's context (for example, its current directory). If no argument is supplied, information is given about your current file server, followed by any non-current servers.

```
*FS [[:]file_server]
```

## *I AM

*I am selects NetFS and logs you on to a file server. Your user name and password are checked by the file server against the password file before allowing you access.

```
*I am [[:]file_server_number|:file_server_name]
user_name [[:Return]password]
```

## *INFO

*Info gives file information for the specified object(s).

```
*Info object_spec
```

## *LCAT

*LCat lists all the objects in the named library subdirectory (by default the current library).

```
*LCat [directory]
```

## *LEX

*Lex lists all the objects in the named library subdirectory (by default the current library) together with their file information.

```
*Lex [directory]
```

## *LIB

*Lib selects a directory (the default is filing system dependent) as the current library on a filing system.

```
*Lib [directory]
```

## *LIST

*List displays the contents of the named file using the configured DumpFormat. Each line is numbered.

```
*List [-File] filename [-TabExpand]
```

## *LISTFS

*ListFS displays a list of the file servers which NetFS is able to recognise. The optional argument forces the list to be updated before it is displayed.

```
*ListFS [-force]
```

## *LISTPS

*ListPS lists all the currently available printer servers, optionally showing their status as well.

```
*ListPS [-full]
```

## *LOAD

*Load loads the named file. The optional load address is in hexadecimal.

```
*Load filename [load_addr]
```

## *LOGON

*Logon logs you on to a file server. Your user name and password are checked by the file server against the password file before allowing you access.

```
*Logon [[:]file_server_number|:file_server_name]
user_name [[:Return]password]
```

## *MOUNT

*Mount selects a disc from the file server for general use by setting the current directory, the library directory and the User Root Directory.

```
*Mount [:]disc_spec
```

## *NET

*Net selects the Network Filing System as the current filing system.

```
*Net
```

## *NEWUSER

*NewUser creates a new user identity. You should then use *CDir to create a directory for the new user.

```
*NewUser user_name
```

## *NOTIFY

*Notify sends a message to a network station.

```
*Notify station_number message
```

## *OPT 1

*Opt 1 sets the filing system message level (for operations involving loading, saving or creating a file) for the current filing system:

| | |
|---|---|
| *Opt 1,0 | No filing system messages |
| *Opt 1,1 | Filename printed |
| *Opt 1,2 | Filename, hexadecimal addresses and length printed |
| *Opt 1,3 | Filename, and either date stamp and length, or hexadecimal load and exec addresses printed |

```
*Opt 1 [[,]n]
```

## *OPT 4

*Opt 4 sets the boot action for the current filing system:

| | |
|---|---|
| *Opt 4,0 | No boot action |
| *Opt 4,1 | *Load boot file |
| *Opt 4,2 | *Run boot file |
| *Opt 4,3 | *Exec boot file |

```
*Opt 4 [[,]n]
```

## *PASS

*Pass changes your password on your current fileserver.

```
*Pass [old_password [new_password]]
```

## *PIPECOPY

*PipeCopy copies a file one byte at a time to one or two output files.

```
*PipeCopy source_file destination_file1
[destination_file2]
```

## *PRINT

*Print displays the contents of the named file by sending each byte to the VDU.

```
*Print filename
```

## *PRIV

*Priv sets a user's privilege to normal, fixed, locked or system.

```
*Priv [F|L|S]
```

## *PS

*PS changes the default printer server, checking that the new one exists.

```
*PS printer_server
```

## *READFREE

*ReadFree displays the user's total free space remaining. This command is not available on RISC OS computers.

```
*ReadFree user_name
```

## *REMOVE

*Remove erases a single named file or empty directory. No error message is given if the object does not exist.

```
*Remove filename
```

## *REMUSER

*RemUser removes a user identity.

```
*RemUser user_name
```

## *RENAME

*Rename changes the name of an object, within the same storage unit.

To move objects between discs or filing systems, use the *Copy command with the D(elete) option set.

```
*Rename object new_name
```

## *RUN

*Run loads and executes a file, optionally passing a list of parameters to it.

```
*Run filename [parameters]
```

## *SAVE

*Save copies the given area of memory to the named file. The length and addresses are in hexadecimal.

```
*Save filename start_addr end_addr [exec_addr
[load_addr]]
*Save filename start_addr + length [exec_addr
[load_addr]]
```

## *SDISC

*SDisc selects a disc from the current file server by setting the current directory, the library directory and the User Root Directory.

```
*SDisc [:]disc_spec
```

## *SETFREE

*SetFree changes the free space available to a user. The free space is in hexadecimal.

```
*SetFree user_name free_space
```

## *SETPS

*SetPS changes the default printer server, without checking that the new one exists.

```
*SetPS printer_server
```

## *SETTYPE

*SetType sets the file type of the named file to the given textual file type or hexadecimal number. If the file does not have a date stamp, then it is stamped with the current time and date.

The command *Show File$Type* displays a list of valid file types.

```
*SetType filename file_type
```

## *SHUT

*Shut closes all open files on all filing systems.

```
*Shut
```

## *SHUTDOWN

*ShutDown closes all open files on all filing systems, logs off all NetFS file servers and parks hard disc heads.

```
*ShutDown
```

## *SPOOL

*Spool sends everything appearing on the screen to the specified file. If no filename is given, the current spool file is closed.

```
*Spool [filename]
```

## *SPOOLON

*SpoolOn adds everything appearing on the screen to the end of an existing file. If no filename is given, the current spool file is closed.

```
*SpoolOn [filename]
```

## *STAMP

*Stamp sets the date stamp on a file to the current time and date. If the file has not previously been date stamped, it is also given file type Data (&FFD).

```
*Stamp filename
```

## *TIME

*Time displays the day, date and time of day. On RISC OS computers, this is read from the station; on older computers, it is read from the fileserver.

```
*Time
```

## *TYPE

*Type displays the contents of the named file using the configured DumpFormat.

```
*Type [-File] filename [-TabExpand]
```

## *UP

*Up moves the current directory up the directory structure by the specified number of levels.

```
*Up [levels]
```

## *USERS

*Users displays the user names and station numbers of all users logged on to the currently selected fileserver.

```
*Users
```

## *WIPE

*Wipe deletes one or more objects that match the given wildcard specification. Options are taken from the system variable Wipe$Options, and those given to the command.

| **Options** | **(use `~' to force off, e.g. ~C):** | **Default** |
|---|---|---|
| C(onfirm) | Prompt for confirmation of each deletion | ON |
| F(orce) | Force deletion of locked objects | OFF |
| R(ecurse) | Delete subdirectories and contents | OFF |
| V(erbose) | Print information on each object deleted | ON |

```
*Wipe object_spec [[~]options]
```

# Appendix C: Error messages

When you or a user make a mistake, the Fileserver generates an error message which helps you work out what has gone wrong. The error message appears on the screen of the station that generated the error.

Error messages are listed here in alphabetical order, with a brief explanation of why they occurred and what you or the user can do to correct the mistake. You may get additional error messages from RISC OS or an application; those listed here are just the Fileserver messages.

## Error messages

### Access

You have tried to do something which requires access rights you do not have - for example, reading a file that does not have public read access.

### Already a user

You have tried to create a new user with the same user identity as an existing user. Use a different user identity, or remove the old user.

### Already open

You have tried to open a file which is already in use, or delete a directory that another user is using.

### Bad command

The Fileserver doesn't recognise a command that has been typed; this usually occurs when the command name has been mis-typed.

### Bad data pointer for load

A pointer used by the load process is invalid.

### Bad drive

You have referred to a drive that is not present.

### Bad file name

You have tried to create a file with an invalid name (for example, one that is too long).

### Bad manager function call

A call to the Fileserver's internal management functions was invalid or had bad parameters. Please report this to Network Solutions.

### Bad name

You have tried to use a file or directory name that includes illegal characters (such as $).

### Bad privilege letter

You have tried to set a user privilege using an invalid letter, e.g.

```
*Priv FRED Q
```

Try again, using a valid privilege letter (F, L or S). Use *Priv user_name with no letter to set a user privilege to Normal.

### Bad rename

You have tried to rename a file and have given the wrong number of parameters.

### Channel

You have tried to use an invalid channel number; this may be because of an error in the program you are using, or because the Fileserver has made an error. The Fileserver may think you are logged on when you are not, or may think you are not logged on when you are. Try to log on again (logging off first if necessary).

### Directory full

You have tried to create a file in a directory which is already full (i.e. contains 255 entries). Use another directory or delete one of the files in the directory.

### Disc full

You have tried to save a file that is too large for the amount of space remaining on the disc. Make room by deleting unwanted files.

### Error during putbytes

An error occurred whilst trying to save data to the fileserver. Attempt the operation again.

### File not found

The file you have asked for, or that an application has looked for, can't be found. This may be because the file does not have public read access.

### File too big

You have tried to access a file that is greater than 16Mb in length.

### Heap Full

The application has run out of memory. Try to free some and restart the application.

### Insufficient access

You have tried to open a file that does not have public read access, or save a file in someone else's directory.

### Insufficient privilege

You tried to use a management facility with a user identity that is not system privileged. Log on again as a privileged user.

### Insufficient space

There is not enough space left in the user root directory to save a file.

### Is a directory

You have tried to use a directory as if it were a file (for example, tried to drag it into an Edit window).

### Is a file

You have tried to use a file as if it were a directory (for example typed *Cat filename).

### Not found

You have specified a file or directory that does not exist. You may have mis-typed a filename or given the wrong path name. Use the *Cat command or the NETMGR utility's TREE option to check the name and where it is.

### Server not available

Logon to the Fileserver is not allowed.

### Server internal error, please report to system manager

A serious error has occurred; report it immediately.

### Sorry, not supported

The command or function requested is not supported.

### Too many open files

In random access, you have used all the channels available. Close some files before opening new ones.

### Too many users

You have tried to log on when there are already 128 users logged on.

- Get someone else to log off, or
- wait until someone else logs off, or
- log on to a different Fileserver (if there is one).

### Unable to update password file

The fileserver was unable to update the password file. This may be because the file has been closed by another application and the user of the machine or has been moved. Quit the fileserver and restart it.

### User not known

You have tried to log on with a user identity that is not in the Fileserver's password file. Check that you typed it correctly. The password file may be out of date if you have had to use a back-up because the working version became damaged.

If you have more than one Fileserver on your network, you may be trying to log on to the wrong one.

### Who are you?

You have tried to use a Fileserver command before logging on, or after the Fileserver has been shut down and then started up again. Log on again.

### Wrong password

You have tried to log on but not typed the correct password to go with your user name; you may have mis-typed it. The password file may be out of date if you have had to restore a back-up version.

If a user cannot remember their password, use !Manager to remove the password (see the section *Password* on page 91).

# Glossary

### Access rights

Each file on the disc has an access defined for it which determines who can use, change or delete it. Access is divided into Owner and Public rights. As Network Manager, you have unrestricted access to all files.

### Back-up

A copy of the files on the Fileserver kept on another storage device or on floppy discs. Back-up copies are made to protect users from losing information.

### Client machine

A station attached to the Fileserver host machine by means of a network. Users access the Fileserver from client machines.

### Fileserver root directory

When seen from a Client station, the exported mount point. This is not necessarily the same as the root directory of the filerserver's hard disc.

### Group user

A user who has logged on to the Fileserver using a group identity, given in the form

```
groupname
```

at log on. This is a user with Group privilege. A group user may use a group root directory or have their own user root directory. If he or she uses a group root directory, they own all other user directories in the group.

### Group user directory

A directory shared by a group of users. This is opened when one of the group logs on (and does not have their own independent user root directory). All members of the group share ownership of the group user directory and have equal access rights to the files and sub-directories in it.

### Hidden objects

Directories and files that are not shown in directory displays opened by users who do not have the access to use them. Files and directories with no public read access or no public write access are omitted from directory displays if you have enabled the Hidden objects option from !Server.

### Job

A file sent to the print spooler for printing. The file is called a job while it is waiting in the print queue.

### Library

A special directory used to store transient commands and files that several uses need to access.

### LogFile

A file that stores a record of events performed by the Fileserver. You can choose which events to record. The logfile is a text file stored inside !Server.

### Log on

The process of selecting a Fileserver unit and establishing a connection between it and the client machine so that you can begin using it.

### Mount point

The point in the filing system structure at which !Server is exported. This may be the root directory of the Fileserver hard disc, or a directory on the disc.

### Pathname

The full name of a file or directory, identifying its position in the directory structure. In its fullest form, a pathname gives the name of the filing system, a disc drive number (or equivalent), a disc name, and a list of the directories which must be opened to find the file or directory. For example, this pathname

```
Net#FRED:$.letters.VAToffice.1stQtr
```

would identify a file called 1stQtr stored in the directory VAToffice inside a directory called letters in the root directory of the hard disc called Fred, accessed over the network using NetFS.

### Printer definition

A description of a printer for which a print queue has been set up with !Spooler. The printer definition includes the printer's name, location (parallel or serial port, network, file) and whether it is a PostScript printer.

### Queue

A list of print jobs that have been sent to the print spooler from client machines. The jobs in the queue are printed in the order in which they were sent to the spooler, unless you delete or suspend jobs in the queue.

### Root directory

The main directory on a disc that contains all other directories and files. It is indicated in pathnames by the character $.

### Spooler

A managed queue of files waiting to be printed when the printer is available. The print spooler stores the list of jobs and processes each in turn.

### Status window

A window that reports the current state and use of the Fileserver or print spooler. You can choose to display the status window while the Fileserver is in use, but if you leave it on screen all the time, the Fileserver will run more slowly than if you remove it.

### User root directory

A directory which belongs to a user and in which he or she can save and work on files. Usually, users have their own user directories, which they enter when they log on to the Fileserver. If you do not give users a root directory of their own, the root directory is opened for them when they log on to the Fileserver.

### User profile

A collection of parameters defining a user's identity and privilege.

**End**

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